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PATENTS FOR INVENTIONS.

ABRIDGMENTS

OF

Specifications

RELATING TO

CASKS AND BARRELS.

A.D. 1797–1866.

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PREFACE.

The Indexes to Patents are now so numerous and costly as to render their purchase inconvenient to a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the printed copies of the latter are sold have been added.

The number of Specifications from the earliest period to the end of the year 1866 amounts to 59,222. A large proportion of the Specifications enrolled under the old law, previous to 1852, embrace several distinct inventions, and many of those filed under the new law of 1852 indicate various applications of the single invention to which the Patent is limited. Considering, therefore, the large number of inventions and applications of inventions to be separately dealt with, it cannot be doubted that several properly belonging to the group which forms the subject of this volume have been overlooked. In the progress of the whole work such omissions will, from time to time, become apparent, and be supplied in future editions.

This volume contains Abridgments of Specifications to the end of the year 1866. From that date the Abridgments will be found in chronological order in the "Chronological "and Descriptive Index" (*see* List of Works at the end of this book). It is intended, however, to publish these Abridgments in classes as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place, the reader (by the aid of the Subject-matter Index for each year) can continue his examination of the Abridgments relating to the subject of his search in the Chronological and Descriptive Index.

This series contains the inventions relating to the manufacture of casks and barrels, as well as other similar vessels, whether constructed of wood, metal, glass, or plastic compounds; also the application to casks of pistons, flexible diaphragms, and loose linings. Self-acting apparatus for closing the tap holes of casks on the removal of the tap are comprised in the present series; but inventions relating to the manufacture of bungs and shives will be found in the volume "Preparing and Cutting Cork," &c. Cask stands, self-tilting or otherwise, are included; but machines for cleansing casks are excluded.

April, 1875. B. WOODCROFT.

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INTRODUCTION.

The art of making casks was known and practised by the ancients. The invention is generally ascribed to the wine growers of ancient Italy, who, it is supposed, were the first to devise the principle of construction, and who succeeded in building up with separate pieces of wood, vessels capable of containing liquids.

That the mode of constructing casks ranks amongst the ancient mechanical arts, may be gathered from the works of early classical writers and commentators. Pliny ascribes the invention of casks to the people who lived at the foot of the Alps, and mentions that in his day they were lined with pitch. In the times of Tiberius and Vespasian the art of forming vessels by binding together separate pieces of wood seems to have been well known, and, previous to that period, Varro and Columella, in detailing the precepts of rural economy, distinctly mention vessels formed of different pieces of wood bound together with circles of wood or hoops. The art, which doubtless attained considerable perfection at an early period, was in all probability introduced into Britain by the Romans. Since that time, although the manufacture was one requiring skilful handicraft, but little change seems to have been made in the system of working until the introduction of machinery, which by degrees completely revolutionised all the manufacturing departments of the coopers' trade.

The Company of Coopers was incorporated many centuries ago. There is extant a record, bearing date A.D. 1396, which shows that the mystery of Coopers applied for and obtained an ordinance from the Lord Mayor to restrain those of the mystery from making vessels for holding beer and other liquors out of soap tuns, whereby the flavour of such beer or liquor might be injured. Another ordinance, dated A.D. 1407, relates to the proper materials to be employed, to the workmanship of casks, and to a record of the trade-marks of all the master coopers in London, numbering forty-six. By an Act under date A.D. 1562 brewers were forbidden to make their own casks, and as there is a significant entry in the books of the Coopers' Company of the payment of a sum of 3*l.* 6*s.* 8*d.* for a cask of Gascony wine which it appears on record the Speaker of Parliament had, it has been a question open to conjecture, whether that curious gift had anything to do with the passing of a statute, which had the effect of throwing the whole of the cask making trade into the hands of the master coopers of that day.

The trade of cooperage is divided into several distinct branches, comprising dry coopers, wet coopers, white coopers, general coopers, and back makers.

Dry coopers, who fabricate casks for containing dry goods of all kinds, such as sugar, dried fruits, flour, drugs, &c. are the least skilful of the craft; their branch of the work is of the commonest description, requiring but little finish, and the skill of the workman being inferior, is paid for at a low price. Wet coopering brings out all the skill of the cooper's art, which before the introduction of machinery ranked high in the scale of scientific handicraft. Wet coopers make the various kinds of casks for holding liquids; they comprise two separate bodies of workmen, respectively employed and classed for "large work" and "small work." White coopers make tubs, pails, churns, and such like work of the lightest and cleanest kind. General coopers practise all the branches of the trade without perhaps acquiring any special degree of skill in either. Back makers construct the enormous vessels employed in breweries; this latter class however are scarcely ranked amongst regular coopers.

The figure of a cask proper is that of two truncated conoids joined together base to base, the lines curving from the vertex of each and meeting at the mid-length, where the bases of the two conoids unite and form the bilge of the cask. Every single stave forms a longitudinal portion of the two sections united, and in form comprises in transverse section at one or other part of its length, a proportionate segmental division of the whole cask throughout every part of its varying diameter. When the staves are circumposed or "set up" collectively in the form of a cask, they are convergently pressed together edge to edge by the hoops, the binding force whereof is exerted in direct lines converging to the common centre or axis of the cask, the principle and the effect being precisely the same that the weight of the superincumbent masonry exerts on the stones of an arch, the constructional principle of the body of a cask being in fact nothing more nor less than a portable tubular arch with closed ends.

To ascertain by correct measurement the capacity of a cask is by no means easy of accomplishment, even if every cask was made precisely after the same model; but as casks vary in form, it can only be arrived at approximately. This work in most cases is performed by a class of men called gaugers, whose chief occupation consists in measuring the contents of casks, which for general purposes are, according to the fullness of their shape or bilge, divided into four varieties, ranging from the middle frustum of a spheroid or first variety, to the frusta of two equal cones, or the fourth variety, the second variety being the middle frustum of a parabolic spindle, and the third variety the frusta of two equal parabolic cones. Casks generally are found to belong to either the second or the first variety, the third variety is by no means common, and to meet with a cask of the fourth variety is a very rare occurrence.

Casks are variously denominated, depending for distinction either upon size, form, or capacity; hence we have kegs, barrels, hogsheads, puncheons, pipes, butts, all involving the same principle of construction, but increasing in strength of material in proportion to size. Formerly when the jointing of the staves was effected by hand work, excepting the cooper was very skilful, it was necessary to insert between the jointing surfaces or edges of the staves, reeds or fibrous matter to fill up defective parts in the joints; but since the use of jointing machinery has become general, these interposed matters, excepting in very unusual cases, are not required.

In France, where the manufacture of casks to contain wines and liquors has developed in proportion to the increased growth and production of wines, the wood selected for staves and cask heads is prepared in the winter season, and in the following summer is built up into casks.

Some of the wine stores of Xeres and other Andalusian towns in Spain, contain as many as 4,000 butts of sherry, the oldest wines being kept in huge casks, in size little inferior to the end a box which slides up and down between guides. These boxes are weighted with sand for the purpose of imparting additional weight to the pistons, which so press upon the liquor beneath them, that it is caused to rise up the several service pipes which lead to the apartments above, where it is drawn off through service taps as required.

Provision is made for supplying warm and cold water to wash out the mains, pump, and filter, through which in succession, when required to replenish the service casks, the different malt liquors or the wines pass.

[Printed, 1*s.* 2*d.* Drawing. See Repertory of Arts, vol. 9, p. 361.]

A.D. 1802, November 13.—N° 2658.

SMITH, Henry.—This invention relates to the construction of vessels or barrels devised for the more safe and expeditious carriage of gunpowder, and made of copper or of such other material or materials as are least capable of producing sparks, their shape corresponding or nearly so with the form of the vessels used (at the date of this patent) for conveying gunpowder or board ships, or on land, and elsewhere, and in size respectively such as by means of a handle over or nearly over the bunghole in the bilge, men may pass from one to another, the bunghole being closed by a screw stopper, which by means of a wrench or lever may be tightened up and made watertight. The ends of the handle centre in holders attached to the two central hoops, and as it will serve as a holding for hoisting a barrel, the heads may be secured to the body of the barrel without chimes. Instead of when loading or unloading a ship, rolling the barrels along the deck, which at such times to avoid danger is usually cover with hides, the barrels may be passed along and down into the magazine from hand to hand by a file of men without touching the deck, or wasting their contents, which at all times and under all circumstances is always kept dry; and another advantage is stated to consist in being able to fill cartridges direct from the barrel. Large barrels so constructed may be made to contain more or less than a thousand-weight of powder, and be fixed as store casks in the magazine.

[Printed, 4*d.* No Drawings. See Repertory of Arts, vol. 28 (*second series*) p. 332.]

A.D. 1810, September 7.—N° 3373.

WALKER, James.—This invention relates to the construction of cylindrical vessels or barrels, designed for the safe conveyance of gunpowder, and its preservation from injury by damp. These vessels are made of copper, brass, or other material fit for the purpose, and of such dimensions as may be deemed desirable. Stout metallic hoops may be soldered or rivetted round the margin of the lower end to form chimes to protect the bottom of a barrel, around which is formed a rim that fits inside the end of the barrel, and projecting outwards is rivetted through the chimes. The head or top, which is also fitted in and strengthened by an outer hoop, has a central circular opening with an outer rim, which opening is closed by a copper cap or cover, capable of being opened when required, there being previously fitted inside the rim a circular copper plate, which is luted round with cement, and over the plate is fitted a wooden cover edged with flannel, leather, or such like material. The cap which finally closes the barrel, fits over the rim on the head, to which on one side it is jointed or hinged, the other side being held down by a hasp, which receives when the cap is closed a staple that is fixed to the head, and passing through the hasp is secured either by a copper pin or cottar, or by a copper padlock.

By the employment of such vessels or barrels, gunpowder (it is stated) may be kept perfectly dry, there is no scattering or waste, and cartridges filled at the mills may be stored in them, and thus the danger arising from filling them in the powder room during the time of action is avoided.

[Printed, *6d.* Drawing. See Repertory of Arts, vol. 29 (*second series*), pp. 6, 311, and 377; Webster's Patent Law, p. 129, case 63, and Supplement, p. 25; Carpmael's Reports on Patent Cases, vol. 1, p. 356; Parliamentary Report, 1829 (Patent Law), p. 202; Rolls Chapel Reports, 7th Report, p. 209.]

A.D. 1811, March 6.—N° 3408.

PLASKETT, John, and BROWN, Samuel.—This invention relating to the construction of wooden casks, consists in :—

1st. Cutting, by means of a circular or other saws, out of planking, the staves and pieces in suitable lengths.

2nd. A bench with platform, sliding piece, stave board, and appurtenances, for cutting and fashioning, either curved or straight, the edges of the staves, according to the intended shape of the cask, whether bilged or otherwise, the circular saw being either flat or dished in conformity therewith.

3rd. Apparatus with circular saws of the required form for cutting and shaping the projection or nose on the bung stave, and boring the bung hole with a bit fixed on the arbor which carries one of the saws.

4th. Setting up the staves in the form of a cask and confining them in position by truss hoops.

5th. Relates to the chuck in which the cask is held whilst the chime and groove are prepared for receiving the head.

6th. The cage and vertical revolving arbor or mandril, which answer the purpose of an upright lathe. By means of the chuck and cage the cask is concentrically fixed upon the mandril, whilst by means of suitable cutting or turning tools, the groove and chime are formed. When small casks are chucked a horizontal mandril is used.

7th. Preparing, pegging, and jointing the pieces together which form the heads, the uniform distance of the peg holes being regulated by a gauge piece.

8th. Apparatus or table revolving horizontally, and whereon the head is placed whilst the circumference is turned and shaped to fit the groove.

9th. A kind of lathe with head stocks and centres, between which (when the heads are fixed) the cask is placed and so held as to be capable of rotating freely when the lathe is in motion, and whilst with a spoke-shave it is dressed up externally and completed.

10th. Bending the hoops with regularity by means of a wheel, around which they are lapped; and

Lastly. The means or prime movers which actuate the different apparatus.

[Printed, 4*d*. No Drawings. See Repertory of Arts, vol. 19 (*second series*), p. 331; Engineers' and Mechanics' Encyclopædia, vol. 1, p. 395; Rolls Chapel Reports, 8th Report, p. 84.]

A.D. 1814, December 10.—N° 3858.

DICKINSON, Robert.—This invention relating to the construction of barrels and casks, or other packages made of iron or other metal, refers to the method devised for fitting in fluid-tight the metallic ends, or the top and the bottom.

Into each end of a barrel is fitted a metallic hoop, so bent that one half the width of each hoop fits the end of the barrel, and the other half so projects inwards as to form a recess for the purpose of receiving and supporting the edge of the head or end, the marginal edge of which is turned down to fit into the recess, wherein is introduced a suitable hempen or other fibrous packing, capable when compressed of forming a fluid-tight joint.

The heads are respectively kept in their places by two hoops, one the width of the chime intended to be given to the barrel, being pressed inside each end upon another packing interposed between the edges of the hoops and the outer margin of each head; and externally, so as tightly to embrace the extreme ends, are fitted two other hoops of greater breadth; these latter are preferred to be of rolled iron transversely curved on the outer surface: they are secured to the inner hoops by pins, which pass through both hoops, and the respective ends of the barrel between them. An expansion valve is fitted to such barrels as are intended to contain tar, oil, or other inflammable substance.

[Printed, 4*d*. No Drawings. See Repertory of Arts, vol. 29 (*second series*), p. 157; Rolls Chapel Reports, 8th Report, p. 105.]

A.D. 1814, December 20.—N° 3867.

VALLANCE, John, junior.—This invention relates to the so constructing and securing brewers' vats and store casks that leakage is prevented, even if (as the inventor states) "every "one of the hoops on it should be broken in sunder, ... "or if all the cocks of the vatt should be broken off."

The object of the invention is effected, 1st, as regards securing the stability of a cask or vat in the event of a hoop or several of the hoops being broken, in punching or drilling at stated distances as many holes in each hoop as there are staves in a vat or cask, so that when the hoops are adjusted and tightened or driven on, the several holes shall come in the center of the several staves, one hole in each hoop to every stave. The several staves are then bored through to the inside, the boring bit or instrument being introduced through the holes in the hoops, and when this is done a small screw bolt is inserted through each hole from the inside, a suitable washer or packing being placed under the head of each bolt to prevent leakage; the nuts are screwed on the ends of the several bolts outside, and when tightened up in the usual way the vat or cask is complete.

To avoid loss from broken or defective cocks or taps, an auxiliary valve is so fitted inside the cask or vat as to cover the eduction passage to the cock, through which the liquor cannot at any time be drawn unless the valve is raised, which is effected outside by the pulling of a wire attached to the outer end of a lever that finds a fulcrum on the top edge of the vat, and has its other end connected to the valve cover by a wire that fits and slides through a hole in the top of the vat or cask.

[Printed, 10*d*. Drawing. See Rolls Chapel Reports, 8th Report, p. 109.]

A.D. 1815, December 19.—N° 3970.

DICKINSON, Robert.—This invention relating to hoops and hooping barrels is intended to obviate the labour of hammering one edge of a hoop to bring it to the requisite conical form, and thus avoid the injury to their strength which hoops sustain by such hammering process. During the process of manufacturing the hoop iron, the inventor says, "I set the "rollers out of parallel in a slight degree, or I use a conical "roller; either of these will give a curve to the hoop, which "may be regulated and adjusted by the screws. Or I place a "a block of iron immediately behind the common rollers, "having a hole curved into which the hoop enters as it "leaves the rolls, and being still hot it easily bends to "the required curve. When done, subsequently to its "being manufactured, I use a small pair of rollers set out "of parallel or made conical, as before described, and pass "the hoops through cold, which produces the effect; or I "take the hoop and put one end into a notch, and pull the "other end over a curved block (with a groove in it) of the "intended curve. These, with many other methods, will pro"duce the effect, but when done at the mill in the first "instance it will be most advantageous."

[Printed, 4*d*. No Drawings. See Rolls Chapel Reports, 8th Report, p. 112.]

A.D. 1822, February 5.—N° 4644.

BILL, Robert.—This invention relates to the manufacture of sheet iron tubes, cones, or other form of metallic cylinder adapted to the construction of masts, booms, casks, and to other purposes. Regarding the construction of casks adapted to hold 60 or 70 gallons, the inventor says :—"I take sheet " iron of two pounds to two pounds and half to a foot, more " or less, according to the intended use of the cask, and rivet " the edges of the sheets together, so as to form a vessel of the " required capacity. Within this cylindrical or other formed " vessel I introduce, for the purpose of supporting the " sides, circles or rings made of the before-named 'gunwhale " 'or angle iron,' of a strength or substance not less than " 10 oz., nor exceeding 16 oz. per foot, running measure, " altho' a little less or more might do, yet I have found ¾ of " a pound ℘ foot the best, and ¾ of an inch on each face " (constituting the angle) a proper size.

" These ribs or circles I place at intervals of 7 or 8 inches, " more or less as circumstances may require, which are to be " riveted to the interior surface of the plates, the ribs or " circles exactly fitting the form of the sheet iron riveted, as " before described. The ends or heads of the casks are to be " secured by riveting a piece of circular sheet iron adapted to " the size of the cask to one face of the circle or hoop of " angle iron, whilst the other face is to be securely riveted " round the interior surface of the cask."

[Printed, 6*d*. Drawing. See London Journal (*Newton's*), vol. 4, p. 179; Mechanics' Magazine, vol. 3, p. 432; Rolls Chapel.]

A.D. 1824, October 7.—N° 5008.

DICKINSON, Robert.—This invention relating to the construction of metal casks or barrels designed for containing goods and provisions, particularly on board the ships of the royal navy, and others making long voyages, consists in—

1st. Coating the metallic plates employed in the manufacture, either externally or internally, or both, with such compositions, cements, and cloth lapping saturated therewith, as are best suited to preserve the articles and substances the manufactured casks are intended to contain; also preserving the surface of the plates from oxidation. A composition suited to the first purpose consists of 1 lb. of caoutchouc cut in small pieces, ½ lb. of black resin, and two oz. of Venice turpentine, mixed together and subjected to a temperature of 160° for 24 hours or longer. To prevent rust, the metal of the barrel is coated or bronzed in a manner similar to the method employed for browning or bronzing gun barrels.

2nd. Casks or barrels are constructed with a removable head, the plates forming the body or cylindrical part of the structure of a cask being bent to the proper curve, and either rivetted, soldered, or seamed together as may be deemed most advisable. Fixed round the top of the barrel inside is a hoop made of iron specially shaped (by the rolls in the process of manufacture) with a rebate, for the purpose of forming a ledge whereon the head of the cask rests and is firmly held down by a circumposed series of latch bolts; these bolts turn on studs fixed equidistant round the margin of the head, their free ends taking into inclined slots formed at corresponding distances round the top edge of the cask. The bottom end of the cask is also supported by a rebated hoop, and when adjusted in its place it is secured by turning over and hammering down upon it the bottom edge of the body of the cask.

[Printed, *6d.* Drawing. See Repertory of Arts, vol. 1 (*third series*), p. 88; London Journal (*Newton's*), vol. 19, p. 25, Register of Arts and Sciences, vol. 3, p. 9; Rolls Chapel.]

A.D. 1825, November 8.—N° 5282.

BROWN, Samuel.—This invention relating to the construction of machinery designed for making casks and barrels, comprises:—

A machine for cutting, jointing, or sawing the edges of cask staves to the required angle and curvature for, when fitted together, forming casks and vessels. This machine operates upon the stave by means of a concave circular saw, the stave by the aid of clamps being fixed on a carriage that moves along adjustable curved guides. The staves when formed are set up in the form of a cask, and held together by truss hoops.

The next stage of the process consists in forming the chimes. This is effected by an upright frame and apparatus termed a chiming machine, which is constructed with a head and a base plate, kept in position apart by four pillar bolts, one at each corner. The cask is placed on a circular plate which centers on the base plate, and by means of suitable contrivances, it is held fixed in an upright central position between the pillar bolts, whilst the chiming tools operate. These tools are fixed in a holder carried on the free end of an arm laterally projecting from the lower end of a vertical spindle, whereon also is fixed a grooved pulley which, when actuated causes the spindle to revolve and carry round the arm and the operating tools and cutters. The tool holder by means of a screw slowly moves outwards, and the tools and cutters incising the wood gradually form the chime, and also the groove to receive the head.

A machine for jointing the heads of casks; this may be termed a kind of saw-bench with appliances for holding down and moving the pieces in a direct line, whilst the saw (which is perfectly flat) operates.

The holes to receive the dowels which hold the pieces forming the head relatively in position, are made at correct distances in the edges of the head pieces by a small apparatus which actuates a horizontal drill.

By means of another upright machine the circumferential edge of the head, which is held in a horizontal position, is bevelled top and bottom, and brought to the required shape, and the outer surface of the head is levelled, the tool holders being attached to the upright pillars which support the upper part of the apparatus.

The last operation necessary to the completion of the casks, consists in cross shaving their sides. For this purpose the cask is fixed in an apparatus similar to a turning lathe, and whilst the cask rotates, the shaving tool is made to traverse to and fro along the side.

[Printed, 2*s.* 4*d.* Drawings. See London Journal (*Newton's*), vol. 14, p. 296; Rolls Chapel.]

A.D. 1826, December 8.—N° 5426.

DICKINSON, Robert.—(*A communication.*)—This invention relates to the construction of sheet iron casks, barrels, vessels, and packing cases, which to preserve the metal, are coated with a composition combining metallic and other substances. These vessels may be variously shaped, cylindrical or otherwise.

Describes a cylindrical vessel made in the form of a barrel, having one end or head fixed, and the other removable at pleasure. The body or cylindrical case of this vessel is made out of sheet iron, bent to form and rivetted or united by any convenient means. A narrow internal flange is formed around the top by turning or bending inwards about $\frac{3}{4}$ of an inch of the upper end or edge, and hammering it down to a level. A broad hoop is then rivetted round, one half portion of its breadth projecting above the top level where the edge is flanged inwards. This hoop is strengthened by another hoop, which is stronger and is rivetted outside. The circular plate which forms the head is rivetted to a hoop of angle iron, which just fits inside the broad ring, and rests upon the part that is turned or flanged down. On the upper surface of the head, at equal sexagonal distances apart, are fixed six bolts, which shoot outwards into slotted holes formed or cut through the broad ring first rivetted round the top of the barrel, and by this means the head is securely fixed, gasket or other suitable elastic packing being interposed between.

The metal plates either before or after they are formed into vessels are, for the purpose of cleansing all oxide from the surface, first treated with dilute acid, and then immersed in a bath of melted tin. The tin coating thus received is afterwards covered with a metallic alloy composed of 75 parts of tin, 20 parts of zinc, and five parts of finely powdered glass, which are put together in a crucible and exposed to the heat of a furnace. When in a state of fusion a small quantity of borax is added, and when incorporated the alloy is cast into ingots, and used as required.

In some cases the second coating consists of a mixture of boiled linseed oil and finely powdered glass.

[Printed, 6*d*. Drawing. See Repertory of Arts, vol. 5 (*third series*), p. 373; Register of Arts and Sciences, vol. 2 (*new series*), p. 73; London Journal (*Newton's*), vol. 1 (*second series*), p. 38; Engineers' and Mechanics Encyclopædia, vol. 1, p. 150; Rolls Chapel.]

A.D. 1834, March 20.—N° 6580.

CRANE, Henry, and YOUNG, John.—The object of this invention consists in imparting to hoop iron by a rolling process, the necessary curve for making hoops made therefrom, fairly bed on the tapering surface of the cask or barrel to which they are fitted and applied. The effect is produced on the hoop iron after it has been passed between rollers relatively parallel, by setting the rollers closer together at one end only, and then by passing the hoop iron between them, it is reduced and made thinner at one edge than the other. In this state whilst heated, it is again passed between a pair of parallel set rollers, and these pressing only on the thick edge of the band or hoop, cause the expansion or elongation of that side only, and compel the band longitudinally to assume a curved form, thereby adapting it to fit close to the tapering form of the cask, when in the shape of a hoop it is driven on.

[Printed, 4*d.* No Drawings. See London Journal (*Newton's*), vol. 5 (*conjoined series*), p. 102; Rolls Chapel Reports, 7th Report, p. 150.]

A.D. 1835, January 27.—N° 6752.

GIBBS, Joseph, and GATLEY, Joseph.—This invention relating to the construction of machinery adapted to the cutting out and sawing staves and head pieces for casks, veneers, and articles of wood, bone, horn and other substances, consists in—

1st. So arranging and combining two vertical saws in a saw frame for the purpose of cutting cask staves, that whilst cutting one half the length of a stave they gradually recede from each other, and then approach each other whilst cutting the other half. Two staves and an intermediate piece which answers for the head are cut at the same time.

2nd. Relates to the guide pieces, guiding sockets, and other details of the machinery whereby, whilst cutting, the receding and approaching movements of the saw are effected.

3rd. An apparatus whereby the internal grooves are made near the ends of the cask by means of revolving cutters, to receive the edges of the ends or heads; and the chimes are also shaped at the same time by suitable tools mounted in the same tool-holder, the cask trussed or hooped and fixed on an adjustable table, is during the operation, caused slowly to revolve therewith.

4th. An arrangement of a saw frame with a vibrating saw adapted for cutting veneers.

5th. So arranging and working two or more saw frames by means of one shaft, that the several saw frames and saws so worked act as counterbalances to each other; for example, when two saw frames and saws are combined, the saws in one frame are performing the up-stroke or rise whilst the saws in the other frame descend, and vice versa.

[Printed, 1*s.* 4*d.* Drawing. See Repertory of Arts, vol. 4 (*new series*), p. 253, and vol. 13 (*enlarged series*), p. 387; Rolls Chapel.]

A.D. 1836, July 13.—N° 7146.

BERRY, Miles.—(*A communication.*)—This is an invention of machinery designed for cutting out, shaping, and shaving staves for the construction of casks and barrels. The apparatus comprises three mechanical contrivances for performing distinct operations, and may be erected in separate machines, or combined in one piece of framework. The cutting of the staves out of prepared blocks of timber, is performed by a concave circular saw. The block is fixed upon a sliding carriage, which moves (whilst the saw operates) under the control of guides, curved in conformity with the desired shape of the stave; the details of the apparatus render it self-acting, and a fan is or may be provided for blowing away the sawdust.

The next operation consists in bevelling and properly shaping the edges of the staves, so that they diminish in breadth towards the ends at a suitable curvature for forming the bilge of the cask or barrel. The machine which effects the operation also contains the necessary contrivances for shaving or rounding the outer surface.

In the shaping section of this machine there is also a sliding carriage, and a flat circular saw on a horizontal shaft. A number of staves with their bilged or outer surfaces downwards, are fixed in a bent position upon the carriage, which moves on horizontal rails tilted on one side, so that the carriage is thrown out of level, and the sides of the staves are presented to the saw to be cut at a suitable inclination or angle for jointing accurately together when they are collectively set up in the form of a cask.

The opposite section of this machine imparts to the outer surface of the staves, by means of revolving cutters and tools, the convexity requisite for producing when the staves are circumposed or set up together in the shape of a cask, the necessary cylindrical form.

[Printed, 1*s*. 8*d*. Drawings. See London Journal (*Newton's*), vol. 13 (*conjoined series*), p. 1; Rolls Chapel Reports, 7th Report, p. 177.]

A.D. 1840, January 21.—N° 8346.

BROWN, Samuel,—This invention relates to the construction from sheet iron, of casks and vessels, and to the machinery employed for the purpose.

1st. These sheet-iron casks are in form cylindrical without bilge; the longitudinal joints or seams are made by turning back in opposite directions respectively the edges of the sheet, and when it is bent into the form of a cylinder or shell, the edges are clasped together and pressed or hammered down. The margin of the bottom end or head is turned down to a right angle all round, so as exactly to fit into one end of the shell, into which it is forced and rivetted round, the turned down part forming the chime at that end of the cask. The other end or head, also has its margin turned down, but instead, when placed in the other end of the cask, of being rivetted through, it is intended to be removable when required, and to this end it is furnished with what are called ears, or short bands of soft metal, which projecting upwards above the top edge of the cask are, at equal distances all round, rivetted thereto. The rivet heads projecting inside determine the distance the head is to be forced into the end, and when this is done the ears are bent over the top edge of the cask and hammered down against the chime. A modification consists in rivetting both heads into the ends of the cask respectively, and making a circular opening in one head which is closed by a cover bolted on. To make the casks fluid-tight, the joints and parts finally receive a coating of paint.

The machinery comprises,—

A machine for cutting sheet metal to the requisite size and form for constructing casks.

An apparatus for turning or bending down the margin of the head all round, so as to form a rim projecting on one side.

A machine for bending the shell plates to a cylindrical form; it effects the operation by means of three rollers trigonally disposed in suitable side frames relatively parallel, and capable, as regards distance apart, of adjustment to produce cylinders or shells of different sizes.

A machine for cutting the circular plates required for the heads, and various other apparatus for punching rivet holes, bending the handles, etc.

[Printed, 2*s*. 4*d*. Drawings. See Mechanics' Magazine, vol. 33, p. 205; Jurist, vol. 11, pp. 157 and 590; Law Times, vol. 9, p. 125; Inventors' Advocate, vol. 3, p. 67; Rolls Chapel.]

A.D. 1840, May 20.—N° 8512.

TAYLOR, William Hannis.—This invention relates to the construction of machines designed for cutting, shaping, and bending staves, shingles, and laths, the wood before it is cut being subjected to the process of steaming in a closed chamber, which renders it soft and pliant, the object being to cut the staves rapidly from wooden blocks with much less waste of material than occurs when the staves are cut from blocks in the ordinary manner, by saws and other appliances. The first machine operates by means of a knife fixed on the surface of a plate, which by a crank motion is caused to slide up and down edgewise between vertical guides in the side standards or frames. The knife is set at an adjustable distance from the surface of the plate according to the required thickness of the stave, which is cut off at one stroke of the knife, the steamed block being during the operation, held on the table of the machine in frictional contact with the descending plate. As the staves are cut they fall on a platform, and thence immediately are conveyed to the next, or :—

The shaping machine which, at a single cut, shapes and tapers from their midlength to their ends, two or more heated staves at a time. This is effected by a presser block and a horizontal die or opening, corresponding in length, breadth, and form with the shape which is required for the stave. Along the curved sides of the die opening are affixed cutting blades with knife edges projecting upwards in relief above the upper surface of the die table. Two or more of the staves are placed, one upon another, over the die opening, resting on the edges of the knives, and then by the action of the machine the presser block is caused to descend, and press upon the upper surface of the staves, which are forced down upon the knives. The newly formed staves are thereby driven down and pass through the die opening, whilst the parts cut off their edges fall outside. Thence, whilst still in a hot softened state, the staves are transferred to :—

The bending machine, which operates on one or more staves at a time by means of a fixed concave matrix whereon the staves are laid, and a convex stamping block, which descends upon the staves, and forces them to take the curved form both across and lengthwise of the intermediate space formed between the matrix and the block when they approach each other.

In a modification of the first cutting machine, the cutting knife or knives are attached to the surface of a large metal disc of considerable thickness. The steamed blocks are held against the surface of the disc whilst it revolves at a high speed, and according to the number of knives, one or more staves are cut off every revolution.

In a Disclaimer appended to the Specification, that part or claim of the invention which relates to the preparatory process of steaming the wood, is withdrawn.

[Printed, 1*s*. Drawings. See Repertory of Arts vol. 15 (*new series*), p. 337. Mechanics' Magazine, vol. 33, pp. 497 and 502. Inventors' Advocate, vol. 3, p. 372, Rolls Chapel.]

A.D. 1841, August 11.—N° 9045.

BROWN, Samuel.—This invention relates to "the manu-" facture of metallic casks or vessels, and to tinning or zincing "metal for such and other purposes."

1st. As regards the manufacture of casks, it consists in fixing the heads in the ends of the casks by tinning or soldering When the respective heads are forced into the ends of the cask, in order to secure them, the cask, suspended by a kind of yoke, is slung over and lowered into a shallow bath of melted tin or solder, of sufficient depth, when the cask stands on end therein, for the metal to enter and fill the joint or crevice round the head. Each end of the cask is allowed to remain in the bath about four or five minutes. When the metal is cold the heads are found to be firmly fixed, and the joint all round fluid-tight. Previous to dipping, the ends of the cask are pressed on a surface of powdered resin.

"In tinning sheets of metal which may be of large dimen-" sions, the workman having cleansed the surfaces by pickling "and otherwise, as is well understood, places the sheets of "metal in a trough containing powdered rosin, and then "passes them one at a time into the bath of melted metal, and "allows them to remain immersed for from five to ten minutes, "and if on raising a sheet of metal to the surface any part "or parts are not found to be coated, he is to throw on "powdered rosin and to rub it on to such parts as are not "coated, and again immerse the sheet in the bath, and when "he finds, on examining a sheet of metal, that it is coated all "over, he is to withdraw it from the bath and place it on the "hot plate; then, by means of tow he is to wipe off the super-" fluous metal, first from one side, and then from the other; "the hot plate keeping the coating metal melted on the "surface to allow of that operation."

[Printed, 1*s*. 6*d*. Drawings. See Mechanics' Magazine, vol. 56, p. 143. Rolls Chapel.]

A.D. 1843, May 25.—Nº 9740.

BEADON, Sarah.—(*A communication.*)—This invention relates to apparatus applicable to casks, whereby the tilting or inclination of a cask, during the process of drawing off its contents, may be regulated. The same kind of contrivance is also applicable to looking glasses. It also relates to an arrangement inside casks for detaining the sediment. Two methods of tilting casks are described :—

1st. An apparatus or instrument which being fixed under the back end of the stand, gradually raises it by means of a toothed sector operated by a worm or screw.

2nd. A rest or stand to be placed under the back end of a cask which lays on a cross rail hollowed out or shaped to correspond with its external form. The frame which carries the rail is raised in side guides by a vertical screw, whereon is a worm wheel that is actuated by a worm; the lower end of the apparatus rests on pivots, the bearings for which are attached to the lower part or base of the apparatus, and by this means, according to the height the back end of the cask is raised, the stand is able to assume the necessary inclination.

3rd. Relates to the application of the first-named tilting apparatus, to looking glasses.

4th. Relates to the means adopted for preventing the sediment or dregs in casks running off with the liquor. This is effected by what is termed a dam, formed by a shallow partition fixed across the inside of the cask near the front end. This dam keeps back the sediment, the clear liquor when the cask is nearly empty being induced by capillary attraction to flow over the upper edge of the dam, for which purpose a woollen or other fibrous conductor is laid over the edge of the dam, its end dipping into the liquor which the dam keeps back.

5th. A tap, which will be found described in the series of Abridgments especially relating to that class of inventions.

[Printed, 1*s.* 6*d.* Drawings. See Rolls Chapel.]

A.D. 1843, June 17.—Nº 9792.

BROWN, Samuel.—This invention, relating to the manufacture of casks and other vessels, refers to a mode of forming coverings for metal casks with wood staves, which are bound xed on by external hoops, in fact, constructing a wooden over one of metal somewhat smaller in size. The inventor says :—"By this combination of metal casks or vessels with "staves of wood bound together with hoops, I am enabled to "make casks perfectly tight, and of a very lasting description, "at the same time using comparatively thin plates of metal "to what would be necessary if there were no covering of "wood, and such casks will be found cheap in their manufac-"ture." A short tube fixed projecting from the metal cask incloses the bung hole, and the end of this tube passing out through the bung-hole stave has its edge turned outwards and hammered down upon a washer plate, which is interposed between the turned down edge and the surface of the stave.

Man-holes in one end or head of a cask are provided for such as are intended to contain dry goods, some kind of liquids, or oils, such as palm or cocoa-nut.

[Printed, 6*d*. Drawing. See London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 81; Rolls Chapel.]

A.D. 1844, December 7.—N° 10,419.

RYAN, JOHN.—This invention relates to the construction of casks and barrels intended to contain wine, beer, or other liquor liable to fermentation or decomposition from contact with the atmosphere, from which it is separated inside the cask by means of a flexible air-tight bag or independent lining. The cask may be constructed either with straight sides or bilged, and of wood or metal. Two methods of applying the invention are described and illustrated. The size of the bag or lining in both cases corresponds with the size of the interior of the cask, so that if the bag be filled with liquor, it is supported on all sides. According to one modification the cask has two holes, in the position of tap holes, one in each end. The liquor is introduced through one of these openings into the bag, and it is drawn off through the other tap or hole in the opposite end, the bag being attached to the inside of the cask round each hole is otherwise entirely separated. Whilst the bag is filling, the air is expelled from the cask at the top, and drawn in as the bag is emptied. According to the other method, the liquor is introduced into the cask, and the air goes into the bag; in both cases, whatever the aeriform and also the liquid contents of the cask at any time may be, they are always kept separate.

Describes and shows a cylindrical vessel for holding beer, and fitted with a floating head or piston attached to the underside of an air bag; a fermenting vat with air bag and piston to act on the same principle; an apparatus for drawing liquor from the center of a cask, and a cask or vessel for preserving vegetable and animal substances.

In order to expedite the filling of casks, the air may be withdrawn by an air pump.

[Printed, 8*d*. Drawing. See London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 88.]

A.D. 1846, October 2.—N° 11,391.

WILD, William.—This invention relates to the construction of several machines designed respectively to perform one or other of the processes employed in the manufacturing of wooden casks or barrels, and vessels of capacity. It comprises :—

1st. A surfacing machine for hollowing the interior and rounding the exterior surface of cask staves, so that when set up in the form of a cask the latter has transversely a circular form. This machine operates by means of two revolving cutters, one concave and the other convex. These cutters run at a high velocity in fixed bearings, the wood or stave being moved forward by suitable contrivances.

2nd. A machine for bending the staves to form the bilge of a cask. This is effected by means of right and left-handed screws; the staves being brought to the machine in a heated state are when bent by pressure into the required form, allowed to remain fixed until they cool, and the fibres of the wood have set in their new position.

3rd. A shaping machine, which operates on the edges of the staves by broad cutting blades or plane irons mounted on revolving shafts. There are two shafts and two sets of cutters that operate simultaneously on the opposite edges of a stave, which is held fixed between two curved surfaces in a kind of press, that is mounted on a movable platform. By setting the two shafts in a position relatively inclining from the vertical, the "head rake" form is imparted to the staves, that is, they are so diminished in breadth towards the ends, that when set up or circumposed and trussed together in the form of a cask, the latter has the necessary bilged shape.

4th. A machine for cutting staves to the required length, shaping and bevelling the ends, and sinking the grooves for the heads.

5th. A machine for drilling the dowel holes in the pieces which are intended to form the heads of casks.

6th. A machine or apparatus designed for the setting up and holding the staves in position together, heading, and hooping the cask, and thus completing the manufacture.

[Printed, 2*s*. 8*d*. Drawings.]

A.D. 1847, June 19.—N° 11,761.

ROBERTSON, James.—This invention is entitled "Improve-
" ments in the manufacture of casks and other wooden vessels,
" and in machinery for cutting wood for that and other pur-
" poses."

[No Specification enrolled.]

A.D. 1848, July 29.—N° 12,225.

ROBERTSON, James.—This invention relates to the construction of various machines adapted to perform one or other of the processes connected with the manufacture of casks, tubs, vats, and other similar vessels. It comprises—

1st. A machine for planing and dressing staves, and for cutting and planing the pieces intended to form the heads of different descriptions and sizes of casks. The stave by the action of the machine is thrust horizontally along a series of bearing rollers between two sets of cutting or planing tools, which are fixed at a cutting angle and act simultaneously, the set above the stave imparting to it the requisite convexity of surface for forming the outside of the cask, and the set beneath it the required concavity for the inside.

2nd. A machine designed for the same purpose as the above. This machine also dresses or planes the staves and pieces by means of a series of cutters, which are mounted to operate (one following the other's cut) in a movable tool holder, which traverses lengthwise to and fro above the stave.

3rd. A machine for jointing or planing the edges of staves and head pieces, acts by means of cutters or planing tools fixed in a sliding tool-holder or jointer, of which there are several, some adapted to produce straight, and others, joints of different curvature in accordance with the length of the stave.

4th. A machine designed for bending the staves in conformity to the required bilge of the cask, and for setting them up in the form of a cask or vessel, trussing and compressing them together, the staves having been previously subjected to (by preference) a steaming process, which renders the wood (whilst hot and damp) soft and pliant.

5th. A machine for jointing the prepared pieces together edge to edge to form cask heads.

6th. A machine for cutting cask heads into a circular form, and bevelling and shaping the outer edge.

7th. A machine for topping, sloping, hollowing, grooving, and preparing the ends of trussed casks and other similar vessels for the reception of the heads, previous to the final hooping. The tool is fixed in an adjustable holder, and cuts whilst the cask revolves.

8th. A machine for punching the holes for rivetting hoops.

[Printed, 3*s*. 10*d*. Drawings. See Mechanics' Magazine, vol. 50, p. 117; Practical Mechanics' Journal, vol. 1, p. 279; Artizan, vol. 7, p. 154; Patent Journal, vol. 6, p. 174; Rolls Chapel.]

A.D. 1848, August 8.—N° 12,233.

POOLE, Moses.—(*A communication.*)—This invention relates to a series of machines or apparatus designed for the manufacture of casks, and fixed in regular order as required to perform the succeeding stages of the process upon a long work-bench.

1st. A machine for hollowing staves, which rest upon a curved plate whilst being operated upon by circular cutters.

2nd. A sawing machine for cutting the staves to the required length.

3rd. A sawing machine for edging staves, which previous to the operation, are strained and bent by the holding apparatus to the form required for producing the bilge of a cask or vessel, when they are afterwards set up and trussed together.

4th. A jointing machine for perfecting the side joints of staves.

5th. A machine for turning or smoothing by means of a plane cutter the external surface of trussed casks which are held between the centres of headstocks and revolve whilst the cutter operates.

6. A machine for grooving the inside of the ends of the trussed cask and for bevelling and shaping the chimes. During this operation the cask is held between centers and caused to revolve.

7th. Lathe for turning heads and shaping the edges to fit the grooves in the cask ends.

8th. Apparatus for dowelling the head pieces. The cutters, planes, tools, and appliances required in the several operations are also shown and described.

[Printed, 10*d*. Drawings. See Mechanics' Magazine, vol. 50, p. 163; Artizan, vol. 7, p. 155; Patent Journal, vol. 6, p. 186; Rolls Chapel.]

A.D. 1850, March 7.—Nº 13,000.

ROSENBORG, FREDERICK, and MONTGOMERY, CONRAD.—This invention relating to the manufacture of casks and barrels, consists of several machines adapted to the sawing, shaping, bending, and preparation of staves, which are set up in position and collectively pressed into the form of a cask.

1st. A machine for sawing wood into pieces, suitable in size and form for being made into staves for the construction of casks and barrels. This machine operates by means of segmental saws mounted on the opposite sides of an oscillating frame.

2nd. A machine adapted to forming into staves the pieces cut out by the first-named machine. In this second machine, mounted on a sliding carrriage, there is a press to fix and bend the stave longitudinally into the bilged form it is intended to to have when it constitutes part of a cask; and whilst so bent, it is by the movement of the carriage, carried between two circular saws, which shape both edges of the stave as it passes between them. These saws incline towards each other, so that the two edges of the stave are cut to different bevels respectively corresponding to two radii of the cask taking the width of the stave as a segmental portion thereof. The inclination of the saws is adjustable to suit casks of various sizes, and as the plane of the cut varies in consequence of the ends of the staves being bent upwards, the latter have the requisite tapering form imparted to them at each end for forming when together the bilge of the cask.

3rd. A machine for boring dowel holes in the pieces of wood which go together to form the heads.

4th. A machine designed for simultaneously bending a circumposed series of prepared staves into the form of a cask. The staves are placed in the form of a cask in an upright position, and held by a hoop round the bottom end or head, which lies upon a circular plate that occupies the center of the machine, and whilst so placed, the upper ends of the staves are pressed inwards by the ends of a circumposed series of as many screws as there are staves. These pressing screws are horizontally disposed relatively in radial positions upon a circular frame or platform, the pressing end of each screw pointing to the common center of the apparatus. Fixed upon the outer end or shaft of each screw there is a tooth wheel, and all these wheels are actuated at a uniform speed simultaneously by an annular rack, and by this means the convergence of the top ends of the staves towards the upper end or head is effected. When this is done they are all secured by a chime hoop before the screws are withdrawn by a reverse movement of the annular rack.

[Printed, 3*s*. Drawings. See Mechanics' Magazine, vol. 53, p. 215, and vol. 54, p. 1; Patent Journal, vol. 9, p. 286; Rolls Chapel.]

A.D. 1850, July 17.—N° 13,180.

BROWN, Henrietta. — (*A communication from Samuel Brown.*) — This invention relates to a method of fixing the heads or ends in metallic casks and vessels, and the bottoms and other parts of cans and similar articles. The heads and bottoms are to be cut so much larger in diameter than the vessel, as to admit of the marginal edge being turned down all round to a right angle, so as to form on the outer side a projecting rim, the edge of which when the head is inserted comes level with the edge of the cask or vessel. Then by the pressure of a pair of rollers, one of which near its edge is furnished with a concave groove, and the other with a corresponding convex bead, the ends of the cask where the two thicknesses of metal come together are so bent outwards, that a curved bead is formed projecting round each end. The bottoms and parts of cans and such like articles are connected together in the same manner, thereby not only saving the rivets heretofore used, but adding strength where it is required, the joints being made fluid-tight by tin or solder.

[Printed, *6d.* Drawing. See Repertory of Arts, vol. 17 (*enlarged series*)' p. 149; London Journal (*Newton's*), vol. 38 (*conjoined series*), p. 105; Mechanics' Magazine, vol. 54, p. 77; Engineers' and Architects' Journal, vol. 14, p. 89; Patent Journal, vol. 10, p. 191; Rolls Chapel.]

A.D. 1850, November 7.—N° 13,323.

CLARE, John, junior.—This invention relating to the manufacture of metallic casks, consists in making such casks of metal staves, so combined as to be readily taken apart, put together, or packed away in like manner to casks of wood, and occupy comparatively small space; the inventor says "it will therefore be understood, that the object of my invention is to construct metallic casks in such manner that they shall consist of staves and heads of sheet metal in place of wood, such metal staves and heads, however, being very thin as compared with staves and heads made of wood; and in order to get stiffness sufficient for the staves to retain their proper form, and also for the casks made up therefrom retaining their form, I cause the edges of the staves to be bent or shaped to produce such bilge to the casks as may be desired, and the edges of each stave are bent or formed with flanches, which flanches come together and butt against each other, and these flanches, in putting together a series of staves to form a cask, may be drawn together by screws and nuts, when desired, or by hoops only, or by hoops and screws and nuts; and in fixing the heads I prefer to make a groove at each end of each stave by bending the ends, or by rivetting angle iron thereto, the heads entering into such grooves. The heads I either make of sheet metal, plain, dished, or with cross bars rivited on them, or they may be made of wood. The manner of forming and fixing the heads may, however, be varied."

[Printed, *8d.* Drawings. See Repertory of Arts, vol. 17 (*enlarged series*), p. 343; Mechanics' Magazine, vol. 54, p. 397; Patent Journal, vol. 11, p. 76; Rolls Chapel.]

A.D. 1851, July 5.—N° 13,687.

ROSENBORG, Frederick.—This is an invention of a series of machines designed for effecting the several operations required in the manufacture of casks and barrels, comprising:—

1st. Cross-cutting staves by means of two circular saws, adjustable as regards distance apart on the same spindle, the stave blank being fixed on a sliding frame.

2nd. Jointing and backing staves. By this machine the edges of the stave are by two cutters shaped to the required angle for jointing, and the longitudinal curve is imparted to them for forming, when they are set up and trussed, a cask with the desired bilge; the backing is effected by cutters the width of the staves.

3rd. Chiming and shaping the ends of casks and cutting the grooves to receive the heads. This process is performed by revolving cutters at one revolution of the trussed cask, which rotates during the operation between uprights.

4th. A modification of the last apparatus, whereby in addition to chiming and grooving, the casks may be trussed.

5th. Several machines or apparatus designed for use when trussing casks.

6th. Machines and apparatus designed for bevelling the edges of staves, so that they joint together and form the bilge; the work is performed by cutters, the stave having a compound longitudinal and vertical movement.

In a modification of the above machine, the stave whilst moving longitudinally, slides also laterally to and from the cutters.

7th. Three arrangements of machinery for jointing staves.

8th. A machine for shaping the heads of casks. The wood is in the first instance brought to a circular form by means of a saw, the action of which is suspended, and the elliptical form is given by revolving cutters to the head which, during the operation is held fixed between two plates. In a modification of the above, vertical spindles having inclined cutters mounted upon them, are employed, the plates being eccentrically adjustable.

9th. Apparatus for planing cask heads and other articles by means of cutters revolving at a high speed.

10th. Machine for hooping casks, by means of weighted levers operated by a hand wheel, or by hydraulic pressure, when greater force is required to drive on the hoops.

11th. This part of the invention is supplementary to a former invention of stave cutting machinery, for which Letters

Patent, dated March 7, 1850, were granted to the present inventor and Conrad Montgomery. Three modifications of the original invention are described. In the first the operation is performed on unbent staves, the requisite angle being imparted to their edges by revolving cutters, which change their position whilst the stave passes between them, and advance and retreat simultaneously. In the second modification the cutter spindles are placed vertically, the cutter edges being inclined to suit the desired bevel. In the third, the stave is operated upon whilst in a bent position, which bending is effected as it passes through the machine.

[Printed, 8*s*. 4*d*. Drawings. See Rolls Chapel.]

A.D. 1851, October 17.—N° 13,779.

ROBERTS, Richard.—This first nineteen parts of this invention, which is manifold in its objects, relate to a variety of subjects not appertaining to this series of Abridgments, but consisting mainly in the construction, details, and arrangements of rotary meters, pumps for lifting and forcing fluids, agitating fluids, centrifugal machines, evaporating fluids and moisture, obtaining motive power, and opening and closing lock gates and swing bridges.

The twentieth part relates to adapting hydrostatic pressure or the elastic force of steam in the first instance, and afterwards hydraulic pressure, to the process of compressing or packing goods, and to hooping barrels and casks, and for similar operations. The apparatus employed for these purposes is an hydraulic press and a small ram and cylinder in combination with a piston in a much larger cylinder, the piston being mounted on the top end of the ram, which constitutes the piston rod. The hydrostatic pressure of a column of water or steam under pressure is admitted beneath the piston and the ram, first to raise them in their respective cylinders and commence the operation, and then the water beneath the piston in the large cylinder is discharged, and the hydrostatic or the steam pressure is admitted above the piston, which drives down the ram with a power proportionately as much superior thereto as the measurement of their respective surfaces differ in area. The mode of applying this accumulated power is not further described, but the inventor says "It will "be apparent that almost any amount of power may be

" applied to hydraulic presses by this arrangement of " differential rams, and that the operations may be repeated " as often as is necessary to obtain the pressure required."

[Printed, 3*s*. Drawings. See Mechanics' Magazine, vol. 56, p. 338; Engineers' and Architects' Journal, vol. 15, p. 262. Rolls Chapel.]

A.D. 1852, January 27.—Nº 13,925.

DUNCAN, George, and HUTTON, Arthur.—This invention, relating to machines and apparatus for forming the jointing edges of wooden stave blanks, jointing head pieces, drilling the dowel holes, forming the heads, chiming and grooving the ends of staves, and setting up and trussing casks, consists in :—

1st. Apparatus for cutting and jointing the stave blanks in an unbent state. The staves in succession are passed by means of an endless chain with catches, through a curved guide in contact with and between rotative cutters or sets of cutters fixed on axes set at an inclining angle relatively, so that towards the midlength from each end, the width of the stave gradually increases in proportion to the bilge required to be given to the cask.

2nd. Apparatus for jointing head pieces, which are caused to move along the table of the machine by dogs linked to an endless chain, and as they progress they are held down by a pressing roller, whilst one edge at a time is shaved to make a true joint, by means of rotating knives.

3rd. An apparatus for making the dowel holes in head pieces operates thereon by means of two sets of drills, one set on one side acting simultaneously with another set on the other side, on the opposite edges of the head piece. The drills in each set are adjustable as to distance apart, and the two sets are adjustable for operating on head pieces of various widths.

4th. Machine for shaping cask heads composed of pieces jointed and dowelled together. The head, whilst its circumferential edge by means of a rotary cutter carried by a rocking frame, is being shaped and bevelled, is held between two rotating discs. The amount of cut is regulated by a lever, and by the same means the cutters are taken out of action. The shape of the finished heads by means of an additional movement imparted to the frame, is made slightly oval.

5th. The setting up of staves in the form of a cask is effected in an apparatus wherein the staves are collectively circumposed edge to edge round an inside cask shape or frame on which, whilst the chiming and grooving processes are performed by two sets of cutters on the two ends, they are held by two hollow cones or frustums, which are caused to embrace the ends of the cask and approach each other by right and left-handed screws.

[Printed, 7s. Drawings. See Mechanics' Magazine, vol. 57, p. 118; Practical Mechanic's Journal, vol. 5, p. 261. Rolls Chapel.]

PATENT LAW AMENDMENT ACT, 1852.

1852.

A.D. 1852, October 1.—N° 9.

GREEN, George.—This invention relates to the construction of machines and apparatus designed for the manufacture of casks.

1st. In the sawing machine employed for cutting wood into rough staves, the wood is pressed up to the saws by a moving frame and presser, and held against a movable fence regardless of windings in the wood.

2nd. The saw or saws are stretched in a frame which turns or centers within a second frame, that is capable of moving to and fro in a third frame which has a vertical up and down movement, the fences being moved by cross levers.

3rd. Backing staves by rotary cutters set on separate axes.

4th. Cutting pieces for cask heads by rotary cutters. The wood being fixed to a sliding table is carried beneath the cutter, which is caused to rise and fall either to a fixed or variable extent by a templet.

5th. Turning the heads of casks oval, to compensate for subsequent shrinkage by means of a lathe, the mandrel and back center whereof have a vibrating motion.

6th. In an apparatus for trussing casks two rollers are employed to wind up or tighten one or more bands, chains, or cords, which embrace the set up staves, and contract or draw them convergently together, so that a hoop can be placed on the cask end.

7th. Punching the rivet holes in hoops by an apparatus which, by means of one fixed and one movable eccentric, regulates the distance apart of the holes.

8th. "Splaying hoops" by means of conical rollers or by cylindrical rollers caused to compress and consequently extend one edge of the metal only. The process curves the hoop iron longitudinally, and when bent into the form of a circular hoop the latter is conical.

[Printed, 3*s*. 8*d*. Drawings.]

A.D. 1852, October 1.—N° 21.

DUNCAN, George, and HUTTON, Arthur.—This invention relates to the construction of a machine adapted to the cutting and shaping of staves, and to a machine or apparatus for turning the heads of casks.

The stave cutting and shaping apparatus operates on both edges of a stave simultaneously by means of two revolving cutters, relatively set at opposite corresponding angles, caused to vary in accordance with the required bilged shape of the cask. The staves are cramped on the six sides of a narrow hexagonal shaped wheel or frame of considerable size, one along each side in the direction of the circumference of the frame which revolves on a horizontal axis, and carries the staves in succession between the cutters, which are caused whilst operating to converge and diverge by contact with and by the contour of the sides of the frame, which act as templets or guides, and by this means the unbent staves in succession are cut to the desired taper towards the ends, and the edges to the required bevel.

The apparatus for cutting the heads of casks to a circular form and chamfering the edges, operates by means of cutters carried round a vertical spindle by the arms of a lever fixed in a horizontal position thereon, the head pieces jointed together side by side, being held down upon the bed of the apparatus whilst the cutters operate, by springs attached to the under surface of a holding down disc or pressing plate. One of the cutters takes off the rough, and the other finishes, their radial distance from the center of motion being adjustable.

[Printed, 1*s*. Drawings.]

A.D. 1852, October 1.—N° 33.

POOLE, Moses.—(*A communication from Mr. Goodyear.*)—This invention relates to the manufacture from india-rubber and other substances of a variety of articles and utensils, amongst which are enumerated pails and buckets.

The preparatory process consists in combining the india-rubber with sulphur, and either with or without other materials, the compound being subjected to a high degree of heat. The compound preferred for light articles is simply india-rubber and sulphur, but for heavy goods, other matters and substances may be added, such as gum lac, gutta percha, coal tar or pitch deprived of water by heat, white lead, oxide of zinc, and ingredients capable of imparting colour and otherwise. The articles are made from the compounded material in metal moulds, where they remain during the heating or converting process. The heat during the first half hour should be gradually raised to 230° Fahr. and allowed to stand there for one hour and a half, afterwards to be raised gradually to about 300° Fahr. during the remainder of six hours. In making large articles the composition may be placed between surfaces of woven fabric, and to impart strength and stiffness, metallic hoops may be embedded in the compound.

[Printed, 4*d*. No Drawings.]

A.D. 1852, November 15.—N° 755.

ROBERTSON, James.—This invention, relating to a series of machines and apparatus designed for cutting, dressing, and preparing staves for the manufacture of casks and other vessels of wood is described as follows :—"The rough staves are first
" steamed in the usual way to cause pliability, and then, in
" order that the irregularities or bends in the wood may be
" nullified or counteracted, the stave is screwed up by its
" flat side against a fixed bearing surface or against rollers, so
" that when passed into the sawing machine the wood may be
" accurately cut, a self-acting arrangement being employed
" in connection with these retaining or flattening screws, for
" the purpose of slackening off these holding details as each

" approaches to the cutting edge. At the same time a series " of cutters is arranged to work on the exposed side of the " stave, for the purpose of dressing that surface to the form " required. The staves so prepared are then conveyed to a " second machine, where they are held flat down by screws on " a traversing table, moving in the line of curve intended to " be given to the edges of the staves. As the stave moves " forward, it is first sawn on the edge by a circular saw, to " take off the "over wood" to the required curve, and it then " comes against a set of rotatory cutters, to finish the surface. " At the same time a set of cutters work over the top of " the stave on its flat surface, for shaping such surface as " required. Then, when this flat side and one edge have " been so shaped, the stave is reversed, and the other side and " edge are similarly treated. Several staves may be simultaneously worked in this way, and the staves so prepared, or " indeed in their rough state may be planed or shaped off " evenly by passing them upon or over a table beneath a " roller or pressing guide, which shall act upon the stave so " as to flatten down its irregularities, whilst a rotary or other " cutter is set to work above the stave surface immediately " that the stave emerges from its pressing roller, and whilst " still flattened down." When the 'cask is raised,' the upper ends of the staves are secured by a hoop, and the lower ends, in order that the bilge may be formed, are forced together by a press. Afterwards the cask is conveyed to a trussing machine.

[Printed, 1*s*. 6*d*. Drawings.]

A.D. 1852, November 25.—N° 861.

MURDOCK, James.—(*A communication.*)—(*Provisional protection only.*)—This is an invention of a machine designed for shaping the inner or concave and the outer or convex surfaces of staves. It (as described by the inventor) is constructed as follows :—" A hoop saw, that is, a saw the blade of " which forms a portion of a hoop or cylinder, is mounted " upon a horizontal axle, and receives a vibrating or reciprocating motion from the driving wheel. By the side of the " saw is a carriage, moving parallel to the axis of the saw, " with an intermittent motion communicated to it by the " driving wheel through the medium of racks and ratchets ;

" upon this carriage is placed the piece of timber of which " the staves are to be formed, and which is of sufficient " thickness to form several staves. From the form of the " saw, it will make a cut in the wood, forming an arc of a " circle, forming the concave or interior side of one stave, and " the convex or exterior side of the next stave; and when, by " the advance of the carriage after each successive cut, the " saw has cut through the length of the stave, the stave thus " formed is removed, and the wood advanced to the saw by " set screws, and the operation is repeated until the whole " block of wood is worked up."

The machine is duplex, having two saws on one axis, and a travelling carriage on each side.

[Printed, *4d.* No Drawings.]

1853.

A.D. 1853, February 25.—N° 476.

GRIST, JOHN.—This invention relates to the construction of a variety of machines, severally designed for performing one or more of the operations required in the manufacture of casks, barrels, and similar vessels, consisting in :—

1st. A jointing machine, whereon the rotating cutters are arranged to operate upon the sides of the staves, one cutter being in advance of the other; and causing the center line of the shafts which carry the cutters to coincide with the line of the shafts that carry the feed rollers, which are made conical in form and mounted in bearings upon movable plates.

2nd. And apparatus for chiming and creusing staves, which are operated upon separately before they are set up in the form of a cask.—The ends of the staves are grooved and the chime formed by rotating cutters fixed on the end of spindles that are mounted in headstocks adjustably placed at a regulated distance apart upon a horizontal bed. The staves in succession are carried sideways between the cutters by a pair of rollers, the cutters operating simultaneously on the ends.

3rd. Trussing casks.—This machinery is arranged to truss casks from the inside so that a cask may be operated upon externally without obstruction. The staves being circumposed in the form of a cask upon a circular platform and secured at their lower ends by truss hoops, are all bent inwards by the simultaneous pull of an equal number of chains, which are of uniform length and radiate from a central tube. The outer ends of these chains are attached, one to the top of each stave and their inner ends to the head of a central shaft which by means of a worm and worm wheel is caused to descend on the tube and drag down the chains.

4th. Hooping or close trussing casks.—The operation is effected by means of a series of levers or arms the upper end of each being claw formed. The lower ends of these claw arms are severally jointed to the upper ends of a circumposed series of uprights mounted equidistant upon a circular platform that is caused to descend by screws actuated simultaneously by tooth gearing. The claws catch the upper edge of the hoops, which are drawn down by the action of the screws.

5th. An apparatus for cutting and bevelling the edges of the heads of casks, operates by means of two rotating cutters, adjustable as regards distance apart and working angle to suit heads of different size.

6th. An apparatus for boring bung holes.

7th, Bevelling or "flewing" the hoops of casks to render them conical. This operation is performed by tilt hammers, their faces being set to the requisite angle for making the hoop gradually thinner crosswise from one edge to the other.

[Printed, 2*s.* 2*d.* Drawings.]

A.D. 1853, March 14.—N° 636.

BURTON, Bennett Alfred, and BURTON, Henry Mortimer. — (*Provisional protection only.*) — This invention relates to several apparatus designed respectively for shaping, bending, grooving, chiming, and preparing cask staves ready for packing either for exportation or home use; for preparing, jointing, dowelling and rounding the heads; for preparing the hoop iron; and for setting or gathering up the staves for trussing.

1st. In the process of shaping, the staves are passed in a kind of planing machine between two revolving cutters, one preferred to be convex and the other concave, respectively for curving the outside of the stave and hollowing the inner surface; these cutters are then thrown out of action, and two other cutters on vertical spindles are advanced to operate upon the edges. This machine is also employed for dressing up and jointing the head pieces.

2nd. The bending machine is made to move on a tramway, and with a number of staves bent in parallel rows over a form corresponding to the required curve or bilge of the cask, is run into an oven heated with either steam or hot air. There the staves remain until the wood is softened, and when withdrawn they are left on the machine to cool and until the fibres have set, so that their bent form is afterwards retained.

3rd. The stave is next placed between two curved surfaces in a machine which, by means of revolving cutters groove and chime the ends, and by the aid of other cutters shape and level the edges; the staves are then ready for packing or for setting up and trussing.

4th. The machine which surfaces and shapes the edges of the staves is, by changing the form and position of the cutters, made capable of dressing the headpieces, which are afterwards removed to a dowelling apparatus, that combines the operations by means of drills, saws, and cutters, of making the dowel holes, cutting the dowel pins, and forming the bung holes.

5th. In the heading machine the parts dowelled together are operated upon by cutters placed relatively at angles suited to the required chamfer or bevel of the periphery of the head, a saw preceding first takes off the rough.

6th. The hoop iron is passed between two rollers which are adjusted out of parallel to compress and thereby make one edge thinner than the other, and so avoid hammering.

7th. An apparatus for setting up and trussing casks. The staves are circumposed round the heads which are held the required distance apart on the opposite faces of two discs; the air is exhausted from a chamber at the back of each disc, which is perforated; around each hole is an india-rubber ring, and all the rings lay between the discs and the heads which, when the air is exhausted, are forced against the discs by the atmospheric pressure, and thus held whilst the staves are arranged and trussed.

[Printed, 6*d*. Drawing.]

A.D. 1853, April 7.—N° 834.

GRIST, John.—This invention relating to the construction of various machines and apparatus adapted to the manufacture of casks, barrels, and similar vessels, consists in :—

1st. A saw frame for cutting and shaping doublet staves, which as they pass to the saws, are caused to advance in the required curvilinear path by means of guides attached to the framework of the machine.

2nd. Apparatus for roughing out the staves by means of revolving eccentric cutters or choppers, which taper the staves towards the ends from the midlength, where they are left broader to form the bilge.

3rd. An apparatus for shaping and jointing staves also operates by means of choppers set to the proper angle ; the stave passing between eccentric rollers in its passage between the cutters is shaped to the requisite bevel on its edges for jointing and forming the bilge.

4th. A trussing machine in which the staves are set up in the form of a cask, and by means of a frame divided into two semi-circular hollow parts, that are caused to advance by means of screws and embrace the tops of the staves, which are thereby convergently forced together.

5th. Chiming and creuzing the ends of the body of the trussed cask. This is effected by rotating cutters, carried round inside the ends of the cask on a revolving arm.

6th. A machine for planing the heads of casks preparatory to fixing them. For this purpose the heads are fixed in an apparatus similar to that used for trussing, and planes or cutters are either by hand or mechanically passed over the surface of the wood.

7th. Bevelling the edges of the heads of casks. This is effected on both sides simultaneously by two sets of revolving cutters set to the proper opposite angles, one set operating on the upper side, whilst the other set operates on the under side. By causing the spindles to advance and retire the necessary departure from a true circular form may be imparted to the heads.

[Printed, 2*s*. 4*d*. Drawings.]

A.D. 1853, April 14.—N° 903.

LAYCOCK, William.—This invention relating to the construction of metallic casks and vessels, consists in :—

1st. "The use of one or more wrought iron double grooved " bars, between pieces of sheet metal, for the purpose of " holding or connecting them together in the making of metallic casks made without staves."

2nd. "The use of a wrought iron single grooved bar, for " receiving the heads of metallic casks made without staves."

3rd. "The use of single and double grooved bars in the " manufacture of and for the purpose of connecting or " holding together certain vessels other than casks, such as " cisterns, tanks, cylinders, packing cases, oil cans, and such " like vessels."

"Casks and other vessels made on this principle may be " readily taken to pieces and put together again; and they " occupy little space in packing on shipboard or elsewhere. " An internal resisting bar may be used if required, and the " exteriors of the vessels should in most cases be strengthened " or bound by hoops or bars."

[Printed, 6*d*. Drawing.]

A.D. 1853, June 7.—N° 1401.

COUSENS, Robert Booty.—This invention relating to the construction of "casks or wooden vessels," consists in so holding and arranging the blank staves, that they may be accurately cut to the required shape and their edges jointed to the proper angle regardless of all twists and distortions of the wood. The inventor states "in all staves it is desirable that " the bevilled edges thereof should maintain the same angle " with the face from end to end to insure water-tight joints " in the casks, and therefore in hand coopering the workman, " when jointing a twisted stave, varies its angular position " with reference to the jointing iron in accordance with the " varying twists of the wood. By this invention, instead of " supporting the blank upon a table, it is laid upon an arrangement of three bearing pulleys set somewhat like the " three wheels of a carriage, two being parallel, with a third " a little before them. The blank laid on these three pulleys

" or rollers is thus carried as it were on three points, so that " the tendency of the wood is to go along straight and evenly. " By this arrangement each increment of length of the wood " is held down so as to be cut to the required shape, without " being subject to the distortions of the original blank. The " blank is passed in this condition between a pair of saws or " cutters set at a bevil as regards each other, one on each " side the blank. These saws are formed with circumferential " teeth in the usual manner. To guide the saws along " the lines of the stave edges, a model stave is arranged " beneath. This model stave passes along with the blank, " and directs the cutting edges along the required lines, the " bevil being secured by the angle at which the saws stand."

[Printed, 8*d*. Drawing.]

A.D. 1853, August 27.—N° 1985.

ROBERTS, Richard.—The object of this invention relating to metallic casks, is so to construct them that when empty they may be stowed away in a much smaller space than they occupy when filled. The inventor says "the body of my " metal casks is made of plate iron or other metal in the form " of a frustum of a cone or taper tube. The lesser end of " the conical tube is closed by means of a plate whose peri-" hery is provided with a suitable angle iron; or is bent up " to form a flanch by which it is united to the tube. On the " larger end of the conical tube is a flanch made of angle " iron or other metal to which a plate is bolted to serve as a " cover for the vessel; or two corresponding vessels may be " bolted together by their flanches to make a cask of double " the size of the former. A series of these metallic casks may " when empty be inserted one in another to economise space. " Casks of wood also in the form of a frustum of a cone are " proposed to be so made that, by removing the hoops from " the larger diameter of the conical body, the head may be " taken out, and the cones inserted in each other."

"It is likewise proposed to make casks of either wood or " metal which, instead of being sufficiently conical for casks " of equal size to be stowed as before described, shall be " made as regards their diameter in series admitting of their " being put one in another."

"It will be obvious that polygonal vessels may be treated " in the same manner.

[Printed, 8*d*. Drawing.]

A.D. 1853, August 31.—Nº 2021.

NEWTON, William Edward.—(*A communication.*)—This invention relates to the construction of machinery designed for cutting and shaping staves, jointing their edges, chamfering, and chiming their ends, and to placing them in circumposed position, and putting and driving on the hoops.

1st. Apparatus for forming the staves, the blanks of which are passed "between grooved or toothed rollers, so arranged " with respect to each other, and so curved upon their sur- " faces, as to give to the stave the required shape, the rollers " at the same time being made to compress the wood so that " the shape given to them will be permanently retained."

2nd. The peculiar construction of the carriage of the machine, whereby the joints or edges of the staves are prepared; a number of staves together are jointed simultaneously, and reduced to the required length. The machine in form and action resembles a planing machine, in which the staves are held between curved clamps, several pairs of which are mounted on the table or moving carriage, the cutting tool being supported above by a cross frame or rail that reaches across the machine, and rests between side standards.

3rd. A machine for "crozing and chamfering" the ends of the staves, which is effected by revolving cutters.

4th. Hooping apparatus. When the staves have been arranged in position round the two heads, which are held a regulated distance apart on the ends of two horizontal spindles respectively pointing to each other, they are secured by metallic truss hoops, and in this state the cask is placed and held in an upright position in the hooping apparatus, which comprises a guide similar to the frustum of a cone, to be placed at the heads to guide the hoops to their respective places on the cask, and a driving apparatus provided with a circumposed series of drivers guided by slots in a disc, and kept in frictional contact with the exterior of the cask by springs; the ends of all the drivers strike simultaneously the upper edge of the hoops as in succession they are placed upon the cone guide, and by this means the hoops are forced downwards on to the cask.

[Printed, 1*s*. Drawings.]

A.D. 1853, September 10.—N° 2092.

GRIST, John.—This invention relates to a machine designed for jointing and shaping staves adapted to the manufacture of casks. It (as stated by the inventor) consists in "fixing the " blank to be formed or shaped into a stave firmly on a bed " by means of pressure, in order to prevent the wood from " swerving or 'buckling;' and I impart to the wood, by " means of screw or other suitable gearing, a slight motion " on or round its centre. On one side of the blank at one " end, and on the opposite side at the other end, I mount a " cutter or saw. But cutters or saws are caused to travel in " a straight line the whole length of the intended stave, and " the motion of the wood on its centre presents the edges " thereof to be shaped and formed into a stave."

The saws employed are of the circular kind, mounted on the contiguous ends of two horizontal spindles, the outer ends whereof are slightly raised to throw the saws relatively into positions inclining towards each other, like two lines radiating from a center, so that they cut both edges of a stave simultaneously, and at the angle required for jointing them together in a circle, the blanks during the operation being held in position by clamps, whilst the carriages whereon the saw spindles are mounted move from end to end of the machine. In order to impart the required tapering shape to both ends of the stave necessary for forming the bilge of a cask, the ends of the clamp, which holds the stave in a straight position, are alternately raised whilst the saws operate, so that the level at which they cut is gradually changed.

[Printed, 1*s*. Drawings.]

A.D. 1853, September 20.—N° 2183.

NEAL, Stephen, JERROLD, William Blanchard, and MONTGOMERY, Conrad.—(*A communication.*)—(*Provisional protection only.*)—This invention relating to machinery designed for the manufacture of casks, comprises—

1st. A "machine for chiming and creuzing staves." The piece of wood cut to the size and form of a stave and called a blank, is placed between two suitably formed iron press blocks, which are brought together by screws, and hold the blank until it is shaped into a perfect stave. Whilst so held, the chiming and creuzing is effected by saws, choppers, or knives, and by cutters so arranged and adjusted that the edges of the blank are reduced to the proper angle and shape respectively for jointing together, and for forming a bilge to the cask. It also cuts the grooves for receiving the heads. The tools are mounted in sliding frames, and operate whilst the frames move along the curved sides of the stationary press blocks that confine and press the stave into form. The press blocks are heated, and when the staves are required to retain the curved form, they are when released suddenly cooled.

2nd. A "machine for cutting heads," which being previously jointed and put together are firmly held between two circular plates that revolve. The cutters or saws, which are placed in an angular position at suitable inclines, are mounted on a sliding tool-holder that is capable of moving radially towards the common center of the apparatus.

3rd. A machine for cutting blanks from the rough staves, giving at the same time to one side of a stave a concave, and to the other side a convex surface. The operation is performed by a cylindrical saw, with teeth at the end, and by this means every cut of the saw takes off a stave, transversely concave on one side, and convex on the other.

4th. A machine for giving to hoop iron the rake required to make the hoops when rivetted coniform.

[Printed, *4d.* No Drawings.]

A.D. 1853, November 3.—N° 2555.

DUNCAN, GEORGE, **BOYD**, JOHN, and **BARKER**, JOHN.—This invention relates to machinery designed for use in the construction of wooden casks, and also to the manufacture of casks of corrugated iron.

1st. Machine for bevelling, hollowing, and grooving wooden casks. The cask is placed upon a horizontal circular plate, which is caused to revolve by a worm and worm wheel. The top end of the cask is confined in a hoop, the periphery of which is turned true to work or slide round in a stationary ring. A saw on the lower end of a vertical spindle supported by a slide, that regulates the position of the saw, which, whilst the cask revolves, cuts all the top ends off the staves to one common level. Upon the spindle underneath the saw is placed a circular tool-holder with three planing irons or cutters, one for shaping the chime inside the end, the second for cutting the hollow, and the third for cutting the groove.

2nd. Giving hoops a conic form suited to fit the increasing diameter or bilge of the cask. This is effected by two rollers, so placed relatively out of parallel planes, that they grip or squeeze the hoop iron more on one edge than the other, and consequently cause one edge to be longer than the other.

3rd. Proving casks by means of an air-pump, the interior of the cask being first wetted or saturated with water.

4th. Cutting cask heads to a circular form, and bevelling the edge on both sides at the same time. This is effected by two circular saws, respectively set at suitable angles to operate whilst the head slowly revolves.

5th. Jointing the edges of staves, several of which are held in position on a saw bench by a deep guide, and are cut at the same time.

6th. "Jointing the headings by means of passing pieces of " wood backwards and forwards on a saw table by the side of " a guide, intersected in the middle by a vertical revolving " chopper."

7th. Constructing casks with staves alternately straight and bevelled.

8th. Making casks of corrugated sheet iron, prepared to the required size. A cask is formed by two corrugated sheets, each bent to form half a cylinder; the seams are formed by rivetting band iron over their edges which butt or meet together, otherwise the edges of the sheets may be lapped and rivetted. The heads of these casks may be made either of wood or of iron.

[Printed, 6*d*. Drawing.]

A.D. 1853, November 11.—N° 2613.

DRYBURGH, Richard.—This invention of apparatus designed for holding staves whilst being cut, is as described by the inventor "intended to increase the steadiness of direction " with which staves may be kept presented to the teeth of a

" circular saw, so that they may be thereby cut into their " required shapes. And the means by which this object is " accomplished consists of an [instrument or holder, which " may be called a cramp, formed with teeth projecting at " different distances from the face of a metal plate, screwed to " the slide on which the stave is to be carried forward to be " operated upon by the saw. By the mode in which the " projections of the ends of the teeth are varied, the angle at " which the edge of the stave is presented to the teeth of the " saw is regulated. But my invention is not confined to the " arrangement of such projections so as to be adapted to any " particular angle of direction required for the stave."

[Printed, *6d.* Drawing.]

A.D. 1853, November 12.—Nº 2627.

AUSTIN, William.—This invention relates to the construction of hexagonal wooden casks, with a view to their capacity for packing or stowing with less loss of space, than is the case with circular casks, as several casks with six equal sides may be placed together without intermediate space. The side of such a cask may consist of either one, or more staves, grooved and tongued together, and confined by iron hoops at the middle and ends; the heads are retained either by "cross splayed" or bevelled grooves, or by movable fillets of oak or other wood secured by straps bent over the edge of the cask, and fastened, one end to the head, and the other to the outer side of the end of the staves. For the purpose of rolling such casks from place to place, two strong india-rubber hoops are provided, externally circular and with a hexagonal opening corresponding to the size and form of the casks.

[Printed, *6d.* Drawing.]

A.D. 1853, November 17.—Nº 2662.

CLARE, John, junior.—This invention relating to machinery employed in the manufacture of bar and sheet metals of various transverse sections, comprises, amongst other processes, a machine for rolling the staves of metallic casks. In this machine are mounted two rollers which, when the staves (previously shaped) are passed between them, their edges are turned up or flanged to an angle for jointing together when they are afterwards set up to form a cask, and in cases where the side meeting flanges thus formed are required to approach nearer to a right angle than is effected by the rollers, they are operated upon by dies in a fly press, which is also employed to produce angle and other forms of iron bars for a variety of purposes.

The axes carrying the rollers of the machine are mounted horizontally and relatively parallel one above the other, resting in bearings disposed in suitable side frames, and they are connected by tooth wheels in order that both may revolve at one precise uniform speed. The diametral size of these rollers must be regulated to suit the required length of the stave, which is represented by their circumferential surfaces, whereon upon one roller is sunk round it a recess of the form of a stave tapering in each direction from one point, and on the other roller there is a corresponding projection which gives to the roller the appearance of a stave lapped round it. The projection on one roller fits into the recess in the other, their respective edges being bevelled to correspond and turn up the edges of the stave blank as it passes between them.

[Printed, 1*s*. Drawings.]

A.D. 1853, November 23.—N° 2724.

AMOS, Joseph.—(*Provisional protection only.*)—This invention relating to the preparation of wood used in and for the manufacture of casks refers principally to American oak, which (it is stated) in the case of beer or porter contained in casks made of that wood when so prepared and coated internally, is not only calculated to improve the flavour of beer or porter, but will also keep it sweeter for a longer period. The object of the invention is to extract from the wood the ligneous acid, which, as described by the inventor, is effected by the following process :—

"The timber is first sawn to the required thickness, then
" placed with the edges uppermost in an iron boiler about six
" feet long by two feet wide and two feet deep, and furnished
" with proper flues. This boiler is then filled with water, and
" then the following matters or ingredients added thereto ;
" about one pound of soda, two ounces of black pepper
" ground fine, two pounds of common salt and a bucket full
" of spent hops ; this solution is then got up to a boiling heat

“ and kept gently boiling for about one hour and a half. After
“ which the timber is removed from the boiler and placed on
“ end, leaving space between each piece for the steam and heat
“ to pass off, and when cold the wood thus prepared is perfectly
“ fit for use; and it should be observed that in preparing
“ wood for manufacturing casks specially intended to contain
“ beer or porter, it is subjected to another process, namely,
“ the wood when formed into casks, after having been fired
“ and trussed, the casks are then well swabbed with a mixture
“ of beer grounds and isinglass while the cask is quite hot;
“ this mixture when cool forms a sort of glaze on the surface,
“ and thereby preserves the beer sweet and good for a longer
“ period than other casks. It is to be understood that the
“ above-mentioned glazing process is not necessary in preparing
“ wood for manufacturing casks and other vessels intended
“ to contain liquids other than beer or porter.”

[Printed, 4*d*. No Drawings.]

A.D. 1853, December 2.—N° 2804.

BROWN, Alexander.—The object of this invention relating to the construction of metallic casks, which are made in transverse half sections, is to secure portability, accurate finish, and adaptability to conveniently carry either dry goods or liquids.
“ The body portions of the casks are constructed generally in
“ the ordinary manner, as hitherto pursued in similar work,
“ but each cask leaves the maker’s hands in two separate
“ halves. The division is made transversely across the central
“ bulge of the cask, and each half has a circumferential flange
“ round its opening, perforated with a ring of bolt holes.
“ Thus, as one half can be placed inside the other, and the
“ space so left open may be filled with dry goods, the empty
“ casks are of very easy stowage, and when they are to be put
“ together for use, the two joint flanges in each case are bolted
“ up together, with an india-rubber or other elastic band or
“ ring between them, so as to make a tight joint. Or instead
“ of thus constructing the casks or vessels, with a central joint
“ or division, the shell or body in each case may be made
“ solid and complete, but with an open end. The opening so
“ left is of considerable less diameter than the cask itself, a
“ solid ring being left all round the interior of the cask to
“ carry a ring of holding bolts, and ou the inner edge of this

" ring an edge flange is turned up. This flange corresponds " to an annular groove on the inner face of the cap or " detached end piece, which groove has in it an elastic joint " piece. The end disc is bolted on by means of lugs, corre- " sponding to the ring of bolts in the end ring of the cask. " Or, instead thus bolting on the end, the junction pieces may " be contrived with corresponding notches and projections, so " that the ring of projections on one piece may be slipped " through the notches on the other, and a slight turn of the " cover will then fasten it, an elastic ring being employed to " make a tight joint. Casks with these loose ends may " be carried in one direction full of dry goods, and in the " other, with their heads shipped on, they will answer for " liquids."

[Printed, 6*d*. Drawing.]

1854.

A.D. 1854, March 2.—N° 508.

HOUSSART, Richard Vinkeles, and HOUSTON, Robert.—(*Provisional protection only.*)—This invention of means for preventing atmospheric contact and action upon the liquid contents of closed vessels, relates principally to liquors in casks, which more or less deteriorate in proportion to the increasing amount of air necessarily admitted as the liquid is run or drawn out. It (as stated by the inventor) consists "in " fixing and hermetically closing a bag of waterproof, flexible, " or elastic material around the inner circumference (but " loose from the vessel except at the point of junction) of a " cask or vessel about midway between the two ends, in such " a manner, that when it is filled, the bag shall distend, and " form, to a certain extent, an interior vessel or lining to the " upper portion."

"The cask is filled through one end instead of through the " side, as in the ordinary way, and the bag distends with the " pressure of the fluid, & fills the opposite end to that through " which the fluid enters, & near which end the tap is inserted

" in the usual manner, and on which end the cask will stand " when the fluid is to be drawn off. This end may be called " the bottom, & the other end or tap is movable, so that it " may be taken off at pleasure. In the case of fermented " liquors, where it may be necessary to allow the escape of " gas, the bag may be connected with a false top provided " with an arrangement for that purpose. This false top sinks " as the fluid flows off, so that the cask is always full up to " the false top, and atmospheric air is excluded from the " fluid."

[Printed, 4*d*. No Drawings.]

A.D. 1854, May 25.—N° 1170.

McGAFFIN, John.—(*Provisional protection only.*)—This invention relating to the construction of metallic casks and cisterns, is concisely described by the inventor as follows :—

"This invention has for its object the manufacture of metal " casks and tanks, by the application of corrugated iron, " either coated or not with zinc or other metal, by which " means greater strength and lightness may be obtained."

[Printed, 4*d*. No Drawings.]

A.D. 1854, June 23.—N° 1386.

RUDD, Thomas.—The object of this invention relating to the construction of stands for casks and barrels, is to render casks self-tilting, so that no attention or personal exertion is required, the back end of a cask or barrel being gradually elevated by the apparatus proportionally in relation to the diminished weight of the cask as the liquor runs off. The cask or barrel is supported upon crutch bearings or arms, one or more of which, placed somewhere backwards beyond the midlength of the cask, are movable and secured to a metallic spring or springs, the reaction of which is suitably adjusted to raise or tilt the back end of the cask, proportionate to the diminishing weight of the contents and cask as the latter is emptied. Spiral springs may be used for the purpose, but bow springs are preferred, and their lifting power is made capable of adjustment. Means for depressing the springs whilst the cask or barrel is being placed upon the stand are provided.

A compound stand for holding a number of large casks, may be formed by combining in series, a number of these self-tilting stands in one common frame of suitable dimensions.

[Printed, 8*d*. Drawing.]

A.D. 1854, June 30.—N° 1438.

McGAFFIN, John.—This invention relating to the construction of metallic casks and cisterns, consists in forming the cylindrical or body part of such articles of corrugated sheet iron, either galvanized or otherwise, and supported by cast-iron rims, to which the corrugated metal is fixed either by screws and nuts or rivets. The corrugations of the sheet metal run lengthwise of the cask or cistern, and the rims are cast with external undulating surfaces to correspond therewith, and have internal flanges. In some cases corrugated hoops are used. It is not essential that the sheet metal be corrugated throughout its length, as a margin at the ends may be left plain to receive a plain hoop of angle iron, which forms also an internal flange whereto the heads, which are made of plain sheet metal strengthened by rivetting thereto a bent metal stay or strip, are fastened. The joints between the hoops and cylindrical ends of the body, and between the heads and the flanges to which they are secured, may be rendered fluid-tight by interposing between them respectively a packing of india-rubber or other suitable material.

[Printed, 4*d*. No Drawings.]

A.D. 1854, July 19.—N° 1586.

LONGLEY, James.—This is an invention of a lathe, adapted to turning the curved surfaces of oval or elliptic-formed tubes, casks, and other wooden vessels, and so constructed and arranged that in addition to the revolving motion of the spindle it has also a reciprocatory movement. It is described "as an oscillating or vibratory lathe, supported on or suspended from a driving shaft by two carrying bars, through "one end of each of which the driving shaft revolves, the "other ends forming headstocks in which the lathe shaft "works. Rotation is imparted to the lathe shaft by a band "direct from the driving shaft, the vibratory motion to produce the eccentric action being obtained through the

" instrumentality of a cog wheel, set on the lathe shaft, and " communicating motion to another cog wheel on the carrying " bar, the axis of which works a crank, the other arm of " which being fixed, the revolution of the crank produces the " reciprocating motion required. The crank pins would be " moveable to allow of adjustment to produce any variety of " form desired, and two sets of wheels and cranks, the latter " attached to a crank shaft, would be used, if necessary, to " produce steadiness and precision; the carrying bars con" necting the driving and lathe shafts to be secured from " lateral motion by working in steadying slides, forming part " of any standards or framework convenient for the purpose."

In order to turn and finish the exterior of a pail or other vessel, such vessel should be made fast between plates, and screwed on to the lathe shaft.

" For the purpose of turning the periphery of the bottoms " or tops of the vessels, without the necessity of screwing or " cementing them to a chuck, an elbowed or curved bracket " is firmly attached to the carrying bar, and of sufficient " length to form a point of resistance opposite the extremity " of the lathe shaft, at which point it should be fitted with " screws and adjustments, for tightening anything interposed " between it and the lathe shaft, and at the same time allow" ing it to revolve with the shaft. The disk designed for the " top or bottom of a vessel being then made fast between " two plates smaller than itself, one being screwed on to the " lathe shaft, the other pressed against it by the screw of the " bracket, may be turned in the usual way."

[Printed, *6d.* Drawing.]

A.D. 1854, July 25.—Nº 1636.

McGAFFIN, John.—This invention relates to the use of metallic rings of angle iron, which are fixed round the ends of corrugated metal casks for the purpose of fastening the heads thereto. The inventor says:—" Casks have before " been proposed to be made of corrugated sheet iron, the " corrugations being around each cask, but there has not " heretofore been a convenient mode of fixing heads in such " casks, and my improvements consist of making and fixing " internal rims of cast or wrought angle iron. For this

" purpose, rings or rims of angle iron are made of sizes " depending on the sizes of the ends of the casks which " are to receive them, and I fix these rims within the ends " of casks by screw bolts and nuts or by rivets, and the " heads are of plain sheet metal, which are fixed by screw " bolts and nuts or by rivets to the internal flange of the " angle iron rim. If the ends of the cask are not made " cylindrical, then that portion of the angle iron rim which " comes outside and has fixed to it the corrugated iron of the " cylinder, is to be made of a curve to correspond with " the curvature of the corrugation at the end of a cask in " which the rim is fixed."

[Printed, 4*d*. No Drawings.]

A.D. 1854, August 21.—Nº 1837.

GRIST, John.—This invention relates to the construction of machines designed respectively for jointing, chiming and creuzing staves; for bending staves and for gathering or setting up in circumposed position a number of staves in the form of a cask.

The " jointing machinery consist in the employment of a " surface plate mounted upon a double-bedded lathe with " separate headstocks. The various curves to suit different " sized staves are marked out on this plate, and the wood is " held on it while being jointed by means of clamps or screws. " Each bed is provided with a headstock or carriage, upon " which the cutters are mounted."

Chiming and creuzing is performed either before or after the staves have been bent. The apparatus adapted in the former case, consists of a circular saw or cutter mounted at a changeable angle upon a shaft, and so arranged that the arms of the cutters can be lengthened or shortened to suit staves of different sizes. For performing the operation after the staves have been bent, the apparatus (described in the Specification of former Letters Patent dated September 10, 1853, as applicable to unbent staves) has by the adaptation between the cutters or saws of the apparatus, of a slowly rotating drum possessing the same curve as the staves, been made to perform the operation upon bent staves.

The bending apparatus " consists in mounting in a suitable " framework, supports for the ends of the stave to be bent.

" A shoe or block of the exact curve of the intended stave is " made to descend upon the wood. The wood still in the " frame is heated in a suitable kiln. The pressure is main- " tained a certain time ; the wood and frame are then taken " from the kiln, and the stave allowed to cool ; after which " the shoe or block is raised and the stave removed."

The gathering or setting up apparatus is described as follows :—" Upon a bed plate two heads similar to lathe heads " are made to advance towards or recede from each other, by " means of a right and left handed screw working in the bed " and through nuts at the bottom of the heads. Each head is " provided with a face plate and mandril. One of the face " plates has fixed to it the head of a cask, and the other end " an open ring, or each face plate has a ring fixed to it. The " staves are placed upon the head and ring, and are held " thereon by means of clips or springs or elastic bands, until " sufficient staves are added to form the cask ; the necessary " hoops are then adapted, when the lathe heads are caused " to recede, and the cask rolls out of the machine."

[Printed, 2*s*. 6*d*. Drawings.]

A.D. 1854, November 9.—N° 2384.

ROSS, GEORGE.—(*A communication.*)

According to this invention, worn-out vulcanized rubber articles, and waste, scraps, and pieces of vulcanized rubber, which (it is stated) have hitherto been valueless, are utilized, and when compounded with other substances and submitted to a new process, is applicable to the manufacture of numerous articles, amongst which the mode of forming buckets by means of a moulding press is described.

This press consists of a framework supporting a bucket mould of the requisite shape. The mould is formed between a fixed outer steam jacketted case, and an inner core, which is attached to the lower end of and caused to descend to a regulated depth into the mould by the screw of the press ; the core being hollow is also capable of being heated by steam so that when the compound material is pressed into the interspace between the case and the core, it is both inside and outside in contact with heated surfaces, whereby the components forming the compound will in due time become fused and amalgamated, and when cooled by the introduction of cold water in place of the steam, will form an indurated substance, having (it is stated) all the valuable properties of vulcanized rubber.

The articles and substances which, to form the compound are mixed with the scrap or waste rubber consist of scraps of cloth, sulphur, white lead, coal or wood tar, or other adhesive matter.

[Printed, 1*s*. Drawings.]

1855.

A.D. 1855, March 5.—N° 483.

PAINE, Lewis James, and RYAN, John.—This invention relates to the manufacture of compressible buckets and other utensils, which are formed of india-rubber, leather, impermeable cloth, or other material capable of resisting the passing through of liquids, upon spring wire spirally coiled, or other skeleton shapes or foundations. It is described as follows:—

"According to the shape or outline of utensil, vessel, or " article required, we construct a skeleton form or foundation " thereof, by coiling spring wire, tempered or untempered, " upon a suitable block or model, and having thus obtained " a skeleton or spiral foundation of the required form and " dimension, and adjusted it to the proper degree of expansion " and contraction required, (and coated the same, when " required, with a suitable substance to prevent corrosion or " oxidation), we proceed to line, cover, or encase the same " with the material or materials above-mentioned, or embed " the said skeleton foundation therein."

[Printed, 4*d*. No Drawings.]

A.D. 1855, March 13.—N° 556.

MACAIRE, David.—This invention relates to a method of strengthening casks, which are intended to contain beverages, so that they will "keep an unvarying gauge," also to detector bungs, taps, and vent pegs, for admitting air into casks, but not the admission of any liquid, the attempted fraudulent introduction of which is indicated, the object of the invention being the imparting to casks greater durability, an invariable gauge, and preventing fraudulent adulteration of the contents.

The strengthening of casks and rendering them capable of maintaining an unaltered gauge is effected by the aid of two longitudinal metal bands which are placed one along each side of the cask, and fixed by screws which pass through the bands and the several hoops, and are screwed into the wood staves. The bungs and vent pegs will be found more particularly described in the vol. of Abridgments relating to "Preparing and " Cutting Cork, &c."

[Printed, 8*d*. Drawing.]

A.D. 1855, March 17.—N° 603.

SHAW, George Thomas.—(*Letters Patent void for want of Final Specfication.*).—This invention relates to the construction of an apparatus designed for tilting casks, barrels, and other similar vessels. It consists in adapting to ordinary " stillages," or stands, a movable bed or cradle, whereon the cask is laid. This bed is raised or tilted at one end by means of an eccentric cam, which is fixed upon a shaft capable of rotation. "The excentric may be acted upon by a worm wheel " and worm, or otherwise secured to one side of the framing, " by which means greater steadiness of motion is attained in " 'tilting,' regulating the cask or barrel to any angle required, " and without disturbing any sediment of its contents."

[Printed, 4*d*. No Drawings.]

A.D. 1855, March 29.—N° 697.

BROWN, Walter.—(*Provisional protection only.*) — The object of this invention is the manufacture of metallic casks or kegs with six equal sides, when using sheet iron, tin plate or other sheet metal, the heads for such casks having raised flanges. The sheet metal for each cask or keg is bent on a horizontal hexagonal block capable of rotating on its axis, the metal being forced against the block by a roller, that is pressed up by a spring or other convenient means. Sufficient margin is left on the ends of the sheet to form a lap joint or seam, which is closed in the ordinary manner. In cases where both heads of a cask are fixed, the flanged sides being outwards are either secured by rivetting through the cask ends, or the heads when forced into the cask ends respectively may be fixed by dipping the flange of the heads which is embraced by the extreme ends of the cask, into a shallow bath of melted metal, as heretofore practised. When one head is made movable, it is to be arranged for closing in any appropriate manner. The hexagonal plates for the heads are cut out of the sheet metal without any appreciable waste, which is not the case in cutting out circular heads. The flanges are raised by bending up the margin of each of the six sides of the heads by means of hexagonal dies and forgers.

[Printed, 4*d*. No Drawings.]

A.D. 1855, April 19.—N° 875.

JOHNSON, John Henry.—(*A communication.*)—This invention relates to the manufacture from a compound of india-rubber and gutta-percha vulcanized an hardened, of a great variety of articles, among which are mentioned "water "baskets." The articles are made in suitable moulds from the material in a plastic state, and it is vulcanized and hardened by a subsequent process either whilst in the moulds or afterwards, by submitting it to a high degree of heat in a steam heater, or to the action of a sulphur bath. The moulds may be composed of plaster, but either porcelain, glass, metal, or gutta-percha is preferred. The caoutchoue or the gutta-percha may be sulphurized before moulding, or the pure gums may be dissolved in spirits or carburet of sulphur, as described generally in the Specifications of Hancock's Patents, dated respectively November 21, 1843, and March 18, 1846, and in the Specifications of Letters Patent granted to the present patentee March 7, 1855. In other cases the material may be vulcanized in the sheet; the refuse dust, scraps, and parings thereof may be treated according to the mode described by the patentee in prior Letters Patent, dated August 18th, 1854. Other Letters Patent granted to Charles Hancock, January 12, 1846, and to Brockdon and Hancock, November 19, 1846, for an invention relating to the same branch of manufacture are also referred to.

[Printed, 4*d*. No Drawings.]

A.D. 1855, June 4.—N° 1274.

GREEN, George. — This invention relating to machinery adapted to the sawing, shaping, and bevelling of cask staves, consists in :—

1st. The application to duplex sawing machinery of two separate and independent feed motions, operated by means of two ratchet wheels and pinions, one ratchet wheel being fixed on a hollow shaft, and the other wheel and pinion upon a shaft which passes through the hollow shaft.

2nd. When sawing machinery is arranged for sawing cask staves and such like articles, the "fences" are made movable, and arranged for working in combination with templets, the movement of the fences being governed thereby. In ordinary sawing machinery the fences are fixed.

3rd. The application to sawing machines or frames, of fences in combination with saws not only capable of the ordinary motion, but of being guided by means of forked levers or handles.

4th. Applying a rotating cylinder to sawing machinery arranged for sawing bevels. The bevels are marked on the cylinder, which is set in motion as the wooden stave travels up to the saw. The process of sawing the timbers for shipbuilding by the aid of this machine is also described.

[Printed, 2*s*. 2*d*. Drawings.]

A.D. 1855, July 18.—N° 1612.

REILLY, James.—This invention relates to a machine devised, by means of rollers, for giving to hoop iron the curve necessary for fitting to the bilge of a cask when made into hoops. Instead of hammering along and thereby elongating one side of the hoop iron according to the usual plan, the same result (it is stated) is effected by this machine, which first operates upon the edge of the iron, and afterwards flatwise. It, as described by the inventor, "consists of three rollers, grooved " to the required depth, suitably mounted in a frame, and " driven by suitable toothed gear so arranged as to draw the " iron through the rollers when it is introduced between them. " The rollers are arranged so that one upper roller may be " raised or lowered and adjusted by means of a screw, so as to " exert the required degree of pressure upon the upper side

" of the length of iron intended to form the hoop as it passes " between such upper roller and the two lower stationary " rollers, thereby spreading out the lower side and forming " the curve required to fit the cask. By this means a con- " siderable number of hoops may be operated upon, so as to " produce this preparatory bending simultaneously. If a " number of hoops clasped at their ends so as to form a strong " compact body were put in the machine, I think in that " particular case the grooves would not be required."

The iron is first passed between the rollers edgewise, and resting in the narrow groove of the bottom rollers is pressed upon intermediately by the top roller. This part of the process is stated to stretch the bottom edge of the hoop iron, which as it passes through, curves upwards. The second part of the operation may be performed upon a number of lengths of hoop iron after the first stretching process, by passing together several, laid flatwise upon each other, through the machine simultaneously, and by this means they are bent into the circular form of hoops.

[Printed, 10*d*. Drawing.]

A.D. 1855, August 1.—Nº 1744.

VAUGHAN, Charles, VAUGHAN, William James, and VAUGHAN, Richard.—(*Provisional protection only.*)—This invention relates to the manufacture of tangs or handles for attachment to bowls, pans, buckets, and other vessels of iron, and generally to vessels requiring handles as a means of support. The inventors say :—"We take a piece of iron of the " length of the tang to be made, and we place upon that end " which is to be spread into what is called the bit a short " cross piece of iron. The said pieces of iron having been " raised to a welding heat are subjected to the action of a pair " of dies, by which they become welded together, and the " cross piece spread out into the proper form of the bit. The " pressing dies are so formed that three studs are made on one " side of the bit, which said studs answer the purpose of " rivets in attaching the tang to a vessel, three holes being " made in the vessel. The three studs on the bit pass through " the said holes, and, being rivetted, affix the tang to the " vessel. . . . . We sometimes form the bit without studs."

[Printed, 4*d*. No Drawings.]

A.D. 1855, August 9.—N° 1808.

ROBERTSON, James.—(*Provisional protection only.*)—This invention, relating to machines or apparatus adapted to the manufacture of casks and other similar vessels, is supplementary to a former invention for which Letters Patent dated July 29, 1848, No. 12,225, were granted to him, and which consisted of machines for topping, sloping, hollowing, crozing or grooving, and for heading casks.

1st. The present invention as described refers to "the application or use of metal or other guards fitted on to the back or front side of the cutters, which effect the topping, sloping, and hollowing the cask staves, by which means the danger arising from the cutters being brought too quickly against the wood, and consequently digging too deeply therein, is entirely avoided, as the guards are adjusted at such a distance from the cutting edges of the tools as to prevent the latter from entering too deeply into the wood. The front edge is bevilled or rounded off, so as to present a sloping surface to any inequalities in the surface to be cut, by which means the danger of sudden shocks or jars is prevented, since such inequalities or irregularities of surface will glide under the guard in place of striking against the face of it. It is proposed to apply similar guards to the V-cutters in the heading machine, described by me in the Specification of my said Letters Patent herein-before referred to."

2nd. "An arrangement for adjusting the vertical position or height of the cask in the topping, sloping, and hollowing machine when requisite on its revolving table. This I accomplish by employing a double table, the upper plate of which, and upon which the cask rests, being made to rise or fall as required by means of a screw, spindle, lever handle, or any other suitable and convenient mechanical contrivance."

[Printed, 4*d*. No Drawings.]

A.D. 1855, August 11.—N° 1827.

BROWN, Walter.—This invention relates to the conctruction of metal casks and kegs, or vessels in shape sexagonal, the sides being formed out of one sheet of metal, which is bent (by the apparatus employed) round a six-sided block, there being no waste (as compared with heads circular) in cutting from the sheet the sexagonal heads, the margins of which are flanged to a right angle, by means of six-sided dies and forcers, the corners or angles of the head pieces being cut or nicked to permit of the margins being bent without obstruction. The side seams are either lapped or rivetted. As described by the inventor "the sheet metal for each cask or keg is bent into six " equal sides, allowing for the joining and lapping of the " edges or ends of the plate used, and such bending is most " conveniently performed on a six-sided block or form mounted " on axes at the ends. The sheet of metal is pressed against " this block or form by a folding table. When the bending " has been performed, the ends are joined together in a similar " manner to that heretofore resorted to when making cylindrical casks or kegs of sheet metal. In some cases both " heads are fixed, in others only one head; and this is done " by forcing the head or heads into the partly formed six-sided cask with the flanches of the head outward, and then " the fixing is completed by rivets passed through the metal " of the flanches, and through the metal at the end of the cask " or keg; or the same may be fixed by dipping the end into " melted metal, as has heretofore been performed when fixing " heads in cylindrical casks or kegs, and the moveable head is " fixed in like manner to the moveable heads of cylindrical " sheet metal casks or kegs."

[Printed, 1*s*. 2*d*. Drawings.]

A.D. 1855, August 13.—Nº 1833.

HANCOCK, Walter.—This invention relates to the manufacture of casks or barrels of gutta percha, or compounds of gutta percha, with a view to reduce cost and facilitate the operation; also to air and water-tight linings for casks not in themselves possessing such qualities.

1st. For making gutta percha casks, a sheet of the material is used of sufficient thickness for the purpose. This sheet is reduced to a plastic state by causing it to pass through a hot-water bath on its way to a cask model or block, which is fixed on a horizontal axis that rests in bearings on the top of the opposite sides of a cold water cistern, wherein as the model rotates its lower half is immersed, so that as the plastic sheet is wound around the model, it becomes hardened when it enters the cold water. When the sheet is wrapped completely round the model it is cut off, leaving sufficient material to form a seam or joint, which is to be secured in the usual way after the moulded sheet has been thoroughly hardened by the cold water and removed.

2nd. Gutta percha linings for casks are made in a similar way, excepting that the thin sheet, which is also made plastic by first passing it through the hot water bath, is lapped many times according to its length round the model, the cold water in the cistern preventing the adhesion of the successive lappings. When properly set an incision is made along one side by means of a knife, which cuts through from end to end all the laps, and these when removed and seamed, form severally a separate lining for the same number of casks. The heads of the linings, as also of the casks, are afterwards to be applied and secured in the manner customary to those who are skilled in working such material.

[Printed, 8*d*. Drawing.]

A.D. 1855, August 30.—N° 1957.

GEDGE, JOHN.—(*A communication from Michel Lavaud.*) —(*Provisional protection only.*)—In respect to this invention relating to the manufacture of the headings of casks and barrels, the inventor states :—

"I propose for the purpose of heading puncheons, hogs-" heads, or other casks, to use an apparatus, which by taking " up and firmly holding together all the pieces comprising " what is technically termed the heading, will save one half " of the time now employed in the operation. The apparatus " may be made of metal or wood. On a plane or scale two " cramp irons are to be placed (one of them being movable) ; " then gather the parts together, and they are then secured by " a vice ; this effected, with two screws the wood is firmly " secured to the scale or plane aforesaid ; the circle is then " struck in the usual manner, and by a single saw-cut the " head is formed, which is then to be planed or shaved at the " edges, which can be done on both sides by merely turning " the apparatus over."

[Printed, 4*d*. No Drawings.]

A.D. 1855, September 13.—Nº 2068.

COUSENS, Robert Booty.—(*Provisional protection only.*) —This is an invention of machinery or apparatus designed for curving and setting the staves of casks before being trussed. It consists (as described by the inventor) "of a pair of suitably " formed curving or bending rollers working in cast-iron side " standards, and driven by separate driving bands & gearing " of their own, in order to allow them to move slightly towards " or from each other, according to the varying thickness of " the stave. The upper roller is weighted, & the lower one " is set up by a screw, spindle, or other suitable arrangement. " Another pair of bending rollers is also carried by the " standards of the machine, & situated one in front of, & the " other behind, the central bending rollers herein-before " referred to. The upper surfaces of both the front and back " bending rollers are slightly above the contact surfaces of the " central bending rollers, so that when a stave is passed " through the machine it is set or curved to the requisite " extent by passing over the end rollers, and between the " central rollers herein-before referred to. Previous to passing " the staves through the machine they are prepared by steaming " or heating them, and whilst still hot they are passed " through the machine, and receive the set or curve required."

[Printed, 4*d*. No Drawings.]

A.D. 1855, December 27.—Nº 2932.

GRIST, John.—This invention relates to the construction of machinery devised for the manufacture of staves and headings, and for forming casks, barrels, and similar vessels.

1st. Bending wood for staves. The wood pieces cut to the proper size and either soaked in hot water or steamed, are then bent by means of levers on the curved surfaces of a heated case, and kept there by screws or cramps until the fibres of the wood or stave blanks become set in the bent position.

2nd. Jointing staves. The blank is fixed at a suitable angle on the curved bed of a frame, which is adapted to slide on a saw bench or duplex apparatus, whereon is mounted a circular saw and two sets of revolving cutters. The edges of the blank are in succession cut by the saw and then planed by the cutters whilst passing, first on one side of the saw and returning on the other, the sets of cutters being alternately raised into position for operating by turns on the edges of the stave blank after the rough cut of the saw.

3rd. Setting up the staves and trussing. The staves, circumposed edge to edge round a horizontal cask shape which slowly revolves, are held in position by belts until the truss hoops are tightened on. The shape is in two parts or ends, each capable of contraction, and which can afterwards be withdrawn simultaneously from the trussed cask.

4th. Chiming and creuzing. This operation is performed in a kind of lathe, the unfinished cask being held at one end in a revolving chuck, and at the other in a collar, so that whilst the cask revolves the cutting tools which also revolve, operate inside the end. When one end is finished, the cask is turned end for end, and the operation is repeated.

5th. Cutting and shaping the heads is also done in a suitable lathe, the pieces all previously side jointed and made of one uniform thickness, being put together edge to edge between two revolving circular face plates, whilst two circular saws set relatively at suitable angles, cut off the waste and chamfer the edges to the proper bevel, the final smoothing being afterwards effected by suitable tools.

This lathe is so contrived, as to be capable of shaping heads in form either circular or elliptical.

[Printed, 1*s.* 10*d.* Drawings.]

1856.

A.D. 1856, January 26.—N° 209.

DALGETY, ALEXANDER.—This invention relates to the construction of a self-acting tilting stand for casks or barrels. It consists of a holding or supporting frame with three bearing points whereon the cask rests. This frame has the form of a **T**, the upper edge of the cross rail of which is made hollow or concave for the front end of the cask to lay in, the ends of the rail resting on knife edge bearings supported by side standards. The center bar of the **T** frame is curved to the longitudinal form of the cask, and constitutes the bed on which it lays. The back end of the center bar or bed is supported by an upright tube, wherein is a spiral spring that rests on the end of a rod, the upper end of which enters the lower end of the tube, its lower end being jointed to the foundation plate. When the full cask is laid upon the T frame, it remains in a horizontal position until the liquor has been so far drawn off as to require tilting, and this is then effected by the reaction of the spring, which when the weight of the cask by drawing off the liquor has diminished to a certain point, gradually lifts the cask to a tilted position.

[Printed, 6*d*. Drawing.]

A.D. 1856, July 4.—Nº 1570.

CHANDLER, THOMAS.—This invention relates to a cask stand, with which is combined a curved ratchet lever for tilting the frame whereon the cask lays, when it is required. The frame is rectangular, the inside edge of the upper surface of the two side rails being cut or curved out to form a hollow bed for the cask. This frame is supported at its midlength on a center shaft, the ends whereof rest on two side standards. The frame is at liberty to oscillate on the shaft, the movement being regulated by a curved ratchet lever, one end of which is jointed to the front cross bar of the frame. This lever passes through a loop stop attached to the base of the stand, its opposite end being free curves upwards, and serves as a handle to regulate the inclining position of the frame, which is brought by the lever nearly upright to receive a cask, and inclined from the horizontal when the latter requires tilting. With this apparatus (it is stated) one man may with the greatest ease, hoist or stoop a very heavy cask.

[Printed, 6*d*. Drawing.]

A.D. 1856, September 12.—Nº 2140.

ELLIOTT, JOHN.—This invention relates to a mode and apparatus for causing and maintaining a separation of the liquids or the gaseous contents of a vessel from the atmosphere, which in order to avoid a vacuum it is necessary to admit from time to time in proportion as the liquid or other fluid contained in the cask is discharged. The invention it is stated may be variously applied and adapted to many uses, amongst which are enumerated casks and barrels for storing and supplying malt liquors and other beverages.

The result is obtained by the use of a flexible bag or lining which collapses as the liquor is drawn out of it. The inventor says "I propose to construct my 'apparatus' either with a " flexible waterproof bag of the size and shape, or nearly so, " of the rigid or semi-rigid containing vessel, secured to it at " the top with a water-tight joint, and having a rigid cover " or semi-rigid cover (pierced with holes for admission of " air) to fit the top, or that portion of the containing vessel " to which the flexible waterproof bag is secured, to protect " it from injury or pressure; or with a flexible waterproof " sheet or disk, secured with a water-tight joint to one half or " portion of a rigid or semi-rigid containing vessel, formed " with a flange, to which the other rigid or semi-rigid half or " portion (pierced with holes for air) may be bolted or secured, " thus allowing the waterproof flexible sheet or disk free play " to rise and fall between either portion of the containing " vessel; the former mode being most adapted to allow of " liquors being drawn off without injury from air, and the " latter mode, for flushing with, or regulating the supply of " water for household and public services when used in con- " junction with a two-way cock or taps so contrived that the " inlet pipe shall be covered before the outlet pipe is opened."

[Printed, 6*d*. Drawings.]

A.D. 1856, October 2.—N° 2309.

DESMOND, DANIEL.—The object of this invention is the construction of casks and vessels designed for holding wines and liquors subject to deterioration when exposed to the air admitted inside a cask as the contents are drawn off. To obviate this the position of the cask or vessel is upright, and its form cylindrical; it is closed by a cover at the upper end, whereby when open access may be had to the interior, in which fitted to slide up and down is a piston, the under surface whereof is always to be in contact or level with the liquor contained in the cask, rising when the cask is filled, and descending as the liquid contents run off. The piston is formed with two thin metallic discs, kept an equal distance apart by placing between them concentrically a circular thickness block of smaller diameter, so that the margin of each disc projects all round the block, and they thus form a recess, wherein is placed an elastic tubular packing ring, which is constantly in air-tight contact with the interior of the cask. The air beneath the piston when the cask is fresh filled is carried off through a central tube in the piston, which tube when the air is exhausted is closed by a cap.

The metallic or under surface of the piston, which is in constant contact resting upon the top surface of the liquor, is to be coated with the purest tin, or the more precious metals. The inventor says:—"By storing liquids in vessels made " according to my invention the process will not be attended " with breakage, corks and wire will be dispensed with, and " the labour of storing quantities will be found to be much " less than if the liquor be stored in ordinary glass bottles, " while the quality is much improved, and all waste pre- " vented, these savings of time and material allowing a con- " siderable reduction to be made in the price of the article so " stored."

[Printed, 8*d*. Drawing.]

A.D. 1856, October 14.—N° 2404.

CRESSEY, Thomas Stokes. — This is an invention of two machines, one for sawing and shaping the edges of staves, and the other adapted to the cutting or hollowing and backing their inner and outer surfaces respectively. According to the inventor's description, "the wood for a stave is placed and " securely held on a suitable carriage or bed which is moved " past a circular saw. The carriage has affixed to it a suitable " template, which, pressing against the end of the saw spindle " or axis, moves the circular saw progressively as the cut " takes place. The spindle or axis of the circular saw is " capable of sliding endwise, and is pressed outwards by a " spring, so that its end may constantly come against the " template on the carriage on which the wood to be cut is " held. The carriage is guided by horizontal wheels at the " front and back, which press against ledges or projections " at the front and back of the fixed table or bench on which " the carriage is moved. In hollowing and backing staves a " rotatory barrel of a square section is employed, having a

" cutter affixed by preference at each of its four sides. On " either side of this barrel and parallel with it are supporting " rollers, the bearings of the axes of which are constantly " pressed upwards by springs. Above each of the two supporting rollers is a pressing cylinder grooved on its surface; " these cylinders receive rotatory motion, and move forward " the stave to be hollowed or backed according to the form of " cutters for the time used. There is also another pressing " cylinder above the rotating barrel with cutters for holding " the wood down to the cutters. The three pressing cylinders " and the supporting rollers are carried by a lever, which is " prevented descending too low by fixed stops, and the position to which the lever is allowed to descend is governed by " a cam surface, which acts on a roller or truck on the end of " a connecting rod attached to the lever before mentioned."

The sawing machine described is fitted with two sets of apparatus.

[Printed, 1*s.* 4*d.* Drawings.]

A.D. 1856, October 31.—N° 2561.

WORSSAM, SAMUEL, and GRIST, JOHN. — (*Provisional protection only.*)—This invention relating to sawing machinery adapted to the cutting of staves for the construction of wooden casks, doublets, tonguers and curved articles, ships' timbers, and to forming and shaping parts of wheels, operates by means of two band saws, set at such a distance apart as is necessary for the depth of the article to be cut, and the blanks from which the articles are to be formed are mounted upon a revolving frame or platform, to which motion is communicated by toothed or other suitable gear. "The band " saws are carried over drums and work in the same plane. " For cutting doublets, tonguers, and other like curved " articles, the frame which carries the wood or blank is furnished at bottom or in any other suitable part with a pin " or stud, which is caused to follow a groove, corresponding " with the form to be given to the article to be cut, made in a " bed or table upon which the frame rests. As in the previous " case the band saw works in the same plane. In the cutting " of ships' timbers and others from curved or irregularly " shaped wood, we employ band saws, as before, and cause " the wood to advance to the saws, and always in the direction

" of the grain, or as nearly so as may be, by supporting " guiding friction rollers, placed above, below, and, if need " be, at the sides of the wood. In the cutting of staves we " employ band or circular saws, or saw blades, mount the " wood upon a carriage provided with excentric toothed " pinions, which are caused to travel along a toothed rack. " The saw, as in the previous cases, moves in the same " plane. For cutting spokes and other like curved articles " we employ a lathe bed, in which the blank to be cut is " fixed, and cause the bed to oscillate in the direction of its " breadth, so as to offer different sides to a cutter made to " travel in a line parallel with the oscillating bed; or we " employ a stationary bed and two cutters, one to travel over, " and the other under the wood, and make the cutters in such " forms as will suit the curves to be given to the article to " be formed. In the last-named two cases, instead of the " cutters travelling, the wood may be made to travel to " them."

[Printed, 4*d*. No Drawings.]

A.D. 1856, December 8.—N° 2903.

LEWSEY, Charles John, and **NASMYTH**, George.—(*Provisional protection only.*)—This invention, relating to the treatment and application of the woods employed in the manufacture of casks and similarly constructed vessels, consists (as stated) "in the use of woods compressed on the edges and " other parts intended to be brought into contact, or by " placing between the edges or other parts (whether com- " pressed or not) pieces of compressed wood."

Any of the well-known appliances adapted to the compression of wood, may be availed of for the purpose of effecting it.

[Printed, 4*d*. No Drawings.]

1857.

A.D. 1857, March 5.—N° 648.

WOODLEY, John, and **SWINFORD**, Henry Herbert.—This invention relates to sawing apparatus adapted to the preparatory cutting of staves for casks, and other purposes. The apparatus operates by means of band or other saws which (as stated) "work through the bed plate or table of the sawing "machine between two guide rollers, one of which is a plain "binding roller, the other, acting as a templet, is a cam or "excentric, furnished with points or like means for carrying the "wood forward, and it is adjusted by a regulating screw. "Two or more roughened guide rollers are placed in any "convenient pesition for guiding the wood while being sawn. "Templets of the common form may be substituted, made of "leather, gutta percha, vulcanized india-rubber, or other "flexible materials."

[Printed, 6*d*. Drawing.]

A.D. 1857, March 21.—N° 803.

HEMMING, Frederick Shand.—(*Provisional protection only.*)—This invention relating to a method of treating peat, mixed or otherwise with fibrous substances, whereby it is reduced to a consistency resembling and possessing the properties of marine glue, is adapted amongst other applications to the manufacture of casks. The inventor says :—

"I prepare my peat by triturating it well, and, when neces- "sary, which is but seldom, I remove by washing or otherwise "the earthy matters. I then mix it with a quantity of other "fibrous materials so as to increase its fibrous texture. In "some cases this is not required, but generally, it is highly "advantageous to do so. I then mix it well with a combina- "tion of oil, resin, tar, india-rubber, and gutta-percha, one, "all, or any of them in various proportions, resembling in "some degree the constitution, and possessing the properties "of "marine glue." This mixture I prefer to add at a high "temperature. The effect of it is to produce a viscous tough "mass, which, being put into moulds prepared according to "the form of the article to be made, is subjected to hydraulic "or other great pressure, and allowed gradually to cool. I "propose to render it also non-inflammable by impregnating "the mass with any of the metallic salts known to possess "that property. I propose to make use of the peat, prepared "in this way, for manufacturing" casks and such articles which are now made of fibrous materials.

[Printed, 4*d*. No Drawings.]

A.D. 1857, June, 10.—Nº 1628.

ROBERTS, Thomas Humphrey. — This invention relating to the manufacture of the cask heads, and to the chimes of wooden casks, is said to add strength to those parts, and to have the advantage of offering greater facility for accurate guaging; it also refers to a mode of heating or fireing the interior of casks without smoking or charring.

1st. In place (as stated by the inventor) "of bevilling the " edges of the cask head on the outer and inner sides, for the " purpose of fitting it into the chine grooves, as is usually " the case, I do not bevil it at all, so that the inner and outer " faces of the cask head are perfectly flat and even up to the " staves. I have no chine groove whatever, but the ends of " the staves are dovetailed to a shape corresponding exactly to " the bevilled edge of the cask head, and the dovetailing is " of a width corresponding to the entire thickness of the cask " head, so that the chine is better supported and strengthened " and a leakage more effectually prevented than when the " junction of the head is effected by a thin bevilled edge as is " ordinarily the case."

2nd. Instead of making a naked "fire inside the cask, for " the purpose of facilitating the bending of the staves, it is " proposed to use a metal cap or dome which is placed inside " the cask whilst its mouth is open to a small fire-place; the " heat and flames are carried away either by a chimney " attached to the top of the dome, and passing out at the top " of the cask, or by so arranging a flue that the flames will " first enter the dome and heat it, and then pass off to a " chimney in any convenient situation. The cask head is " covered in by any suitable cover to prevent the escape of " the heated air therefrom."

[Printed, 10*d*. Drawing.]

A.D. 1857, June 12.—Nº 1650.

NOAKES, Benjamin, and WOOD, Frederic John.—This invention relates to an apparatus designed for "sealing the " side joints of metallic casks with metal in a molten state " contained in a bath or vessel, fitted with a grating or gauge " which is supported or retained at such a distance from the " bottom of the bath, and the level of the metal maintained

" at such a height, that the joint to be sealed shall descend " sufficiently into the metal to receive the necessary coating, " while a grating or gauge supports the body of the cask."

The vessel or bath is long and shallow, and flanged round to rest over any suitable heating apparatus. The size of the grating is such that it covers the internal area, and it rests upon tongues near the bottom. The seam side of the cask to be soldered is turned downwards resting upon the grating, which is just covered by the molten metal, so that the latter is brought into contact with the seam or joint, and adhering thereto, seals it. The cask is then removed, and placed in a position for the soldering metal to cool and harden.

During the operation the bath is kept in a molten state by the fire beneath, and in this way in succession the seams or joints of a number of casks may be readily closed.

[Printed, 6*d*. Drawing.]

A.D. 1857, July 8.—N° 1894.

GREEN, GEORGE.—This invention relating to the manufacture of wooden casks, barrels, and similar articles and vessels, consists of machines and apparatus designed for sawing, jointing, and backing staves; sawing, 'smuggling,' and turning the heads; and 'splaying' the iron hoops. It comprises :—

A sawing machine which operates by means of an endless band saw, in combination with a fence, which has freedom to move laterally, and a template against which by the aid of a lever the wood is pressed by the fence.

The "backing machinery" operates by means of two revolving cutters placed one on each side of a recess sunk in the middle of a "cutter block" that is placed in a frame capable of up and down motion or of being fixed. The stave is held down on the bed of a machine by a lever which passes through the recess and it is moved along under the cutters by an endless chain or a screw. A rib left on the back of the stave by the cutters, is afterwards taken off by a revolving cutter mounted in a separate apparatus.

The machine for jointing staves operates by means of an endless saw band in combination with templets which regulate and guide the movements of the carriage whereon is placed the stave, the edges of which are shaped to the required form for jointing together when set up in the cask. The chips and pieces falling on an endless band are removed as the band slowly revolves.

A machine for sawing or smuggling the wood pieces for forming the heads. This machine also operates by means of an endless band saw, the wood pieces being held by clamps or dogs upon a travelling carriage.

Planing flooring boards by means of rotary cutters instead of plane irons.

An apparatus for turning the heads circular and shaping the margin and edge. The head is pressed by a dog against a surface chuck in an ordinary lathe, whilst it is operated upon by cutters mounted on a slide rest. The "splaying" of iron hoops is effected by a hammer actuated by a crank or eccentric, the face of the hammer being convex like a cooper's hammer, and the anvil face made correspondingly hollow. The hoop iron is moved gradually forward under the blows of the hammer by feeding rollers.

[Printed, 1*s.* 8*d.* Drawings.]

A.D. 1857, July 30.—N° 2072.

CLARK, William Stettinius.—(*A communication from Wilson, Green, and Wilson.*)—(*Provisional protection only.*)

The object of this invention relating to the construction of metallic barrels, is to produce a perfect vessel adapted to hold and retain gunpowder. To this end the inventor states "I "employ corrugated metal cylinders, so made as to resemble "the ordinary wooden keg, those corrugations giving strength "and convenience for handling. I also employ a brace "moulding in addition to the plain head of the keg; this also "gives strength to the perimiter of the head and ends of the "cylinder projecting beyond the heads called the chime, and "in an essential degree contributes to the facility of handling, "and by casting the female screw on a mandrell; and thus by "the union of the metal employed we dispense with soldering "a previously formed screw, and avoid the raising of a ring "on the inside of the head. I also form a slot in the head of "the screw fitting the nut, for passing tape under the table, "enabling the manufacturer to permanently affix his address "card thereon, preventing counterfeiting of the contents by "refilling the keg with lower grades of powder."

[Printed, 4*d.* No Drawings.]

A.D. 1857, November 30.—N° 2975.

BROOMAN, Richard Archibald.—(*A communication from André Zoubschaninoff.*)—The object of this invention is to obviate the several objections stated by the inventor to exist against the use of oak casks. These are said to consist of the expensive nature of the wood, liability to leakage, the absorbent nature of the wood, and, as regards metal casks, leakage and the flavour they more or less impart to the contents. The remedy offered by the invention, " consists in " coating the insides of the casks or vessels with an imper- " meable, tasteless, and non-absorbing composition. The " casks and vessels may be made of any of the lighter and " cheaper woods or of metal, in the usual manner. Hot " liquid glue, sufficient to cover the whole interior surface of " the cask or vessel, is poured therein, and the cask or vessel " turned and shaken to allow of the glue running over every " part thereof; any excess of the glue is then run off and the " coating is allowed to set and cool. After becoming cold, a " second composition of hot liquid glue and powdered char- " coal or sawdust is run in over the interior surface of the " vessel, in the same manner as the first coating; and still " further coatings of the like nature may be applied, if " desired."

Casks and other vessels coated internally in the manner described, need not be put together with such accurate care as is required in the ordinary mode of manufacture, and that it is stated) will also cheapen their cost.

[Printed, 4*d*. No Drawings.]

A.D. 1857, December 24.—N° 3164.

BURLEIGH, Benjamin, and DANCHELL, Frederick Ludwig.

This invention relates to the manufacture of a preserving or purifying carbonaceous composition, applicable to the construction or manufacture of vessels employed in culinary, manufacturing, chemical, electric, photographic, structural, and and other purposes and to meat safes, tanks, casks, cisterns, and such like hollow vessels. " It is proposed to take carbonaceous " matter, such as coke, animal or vegetable charcoal, boghead " ash, gas carbon, soot, lampblack, or other suitable material,

" each by itself, or mixed and rendered plastic by means of
" moist, bituminous, resinous, gummy, oleagenous, saccharine,
" glutinous, or other suitable cementing medium, and to force
" the said materials into moulds, suitable for the objects to
" be constructed, by stamping or beating with suitable tools
" by means of machine or other power to the required degree
" of consistency or solidity, after which the objects are baked
" or burned in closed vessels."

Vessels manufactured as above may be made either whole or in parts cemented, screwed, bolted together, bound with hoops, or united by any other process.

To render such vessels impervious to fluids and gases, they are glazed or coated with a varnish or lacquer insoluble in the particular fluids or gases they are intended to contain, and to render them proof against the action of oxygen when exposed to heat, they are to be coated outside with silicious glaze or other similar substance.

[Printed, 4d. No Drawings.]

1858.

A.D. 1858, March 10.—N° 482.

DAUPHIN, Hypolite.—This is an invention of a machine or apparatus designed to supersede the process of hammering by hand, which is practised for elongating one edge of hoop iron, in order that when formed into hoops, it may fit close to the increasing diameter of the bilge of a cask. These bands are useful for arches and structural purposes.

" The machine (as described by the inventor) consists of two
" rollers supported between two standards fixed on a founda-
" tion plate, and held together at their upper part by two
" cross beams. The lower roller is placed in a horizontal
" position; the upper roller is moveable by means of wedges
" which are caused to act on each of its extremities. The
" wedges are independent of each other, and by pressing more
" on one end of the upper roller than on the other, I give to
" it an inclined position with respect to the lower roller.
" These wedges are moved by adjusting screws placed at the

" top of the standard. At each extremity of the upper roller " is fixed an arm having a stud working in a groove made in " the wedges. These arms give motion to an indicator placed " above the machine, which shows the inclination of the " roller. The pressure of the wedges on the journal of the " rollers is communicated by means of a wedge block, which " presses on the spherical surface of a guide block or " bearing, permitting the adjustment of the pressure. A " metallic band is introduced in a rectilinear direction between " the two rollers. The inclination of one of the rollers causes " one edge of the band to be more compressed than the other, " and the band to receive a relative and uniform extension in " its whole length. The band will thus be turned to a perfect " circle. Guides are placed to support the band."

[Printed, 8*d*. Drawing.]

A.D. 1858, March 17.—Nº 542.

CLARK, William Stettinius.—(*A communication from Messrs. Green, Wilson, and Green.*)—This invention relates to the construction of small metallic barrels or kegs for the reception of gunpowder. The cylindric shell of the barrel is made of sheet metal, closed and soldered along the seam by any of the ordinary processes. It is then operated upon by an apparatus containing two rollers, which indent or corrugate it circumferentially. One of these rollers has a series of shallow concave grooves sunk round it side by side towards each end, and the mid space between them (about one-third the length of the roller) is sunk in the form of a concave or shallow curve. The other roller has formed upon it at each end a series of annular convex projections, and its mid space has the form of a broad convex band. The annular convexities on one roller fit exactly into the annular concavities in the other. The shell is slid on to one of these rollers, and when the two are pressed together and rotated, they indent and form a series of annular projections round the ends of the shell and a bilge round the centre, resembling in appearance hoops on the ends of a small wooden cask. Around the heads (which are plain discs) is a brace moulding, which forms and strengthens the chime, and contributes to the facility of handling. Slots in the raised rim of the screw stopper are made for the reception of a piece of tape, which is covered by the manufacturer's label. The collar into which the stopper screws is cast upon a mandril in its place in the head, before the latter is placed in the shell.

[Printed, 8*d*. Drawing.]

A.D. 1858, June 5.—N° 1275.

HADFIELD, George.—This invention relates to the manufacture of wooden casks or shells for inclosing and protecting carboys and other vessels of thin metal, and also inclosing and protecting metallic casks in the same manner. Several adaptations of the invention are shown and described, comprising, a carboy or metal can; a metallic vessel for holding gunpowder; a metallic box with hinged lid; a metallic cask, with flanges at its opposite ends, surrounded by a casing of staves grooved to receive the flanges; the heads of the staves project beyond the metal heads of the casks and form a protection thereto. Tubular metal sockets projecting to the outer surface of the wood covering, are fixed to the metal cask for filling and drawing off; these are closed respectively by the bung and the tap. There is also shown a metallic lined tub. The staves which inclose the various articles are encircled by hoops in the usual way.

[Printed, 10*d*. Drawing.]

A.D. 1858, August 17.—N° 1877.

MILLS, George.—(*Provisional protection only.*)—This invention relates to the construction of machinery devised for the purpose of cutting wood for staves. The wood to be cut (as described by the inventor) "is moved to the saw by means of a " cylindrical drum or wheel and a flexible band, which is fixed " at one end to the circumference of the wheel, and at the " other end presses against the end of the piece of wood so as " to move it as the flexible band is wound on to the circum- " ference of the wheel. The piece of wood is, whilst being " moved up to the saw, held between two cylindrical wheels or " rollers, one acting as a pressing roller to press the wood " against the periphery of the other. The wheel or roller " against which the wood is pressed is of the same diameter as " the wheel on which the flexible band is wound, and they are " both formed with cog wheels and are driven at a like surface

" speed by a pinion. By these means straight sawing will be " accomplished; but when it is desired to cut the staves " thicker at the ends, then provision is made to incline the " wood to the saw at the two ends in order to cause the saw to " cut in an inclined direction, and there are recesses in the " wheel against which the wood is pressed, into which the " ends of the piece of wood enter, and these recesses are varied " in position to suit different lengths of wood."

[Printed, 4*d*. No Drawing.]

A.D. 1858, November 19.—N° 2630.

CRESSEY, THOMAS STOKES.—This invention relates to machinery adapted to the cutting, shaping, and preparing of staves for the construction of wooden casks, consisting in :—

1st. A machine or double saw-bench for cutting the edges of staves, to the required bevel. The bench of this machine is grated to permit of the sawdust falling through, and along it is fixed a straight bar to which an adjustable flexible steel templet is attached; this templet is bent or curved more or less from a direct line by set screws, in conformity with the curve necessary to be given to the stave to produce the desired form or bilge of the finished cask. The stave is fixed on a carriage which slides on a guide and is furnished with an arm at each end, and by means of these arms following the curve of the templet whilst the carriage carries the stave up to contact with and past the saw, the carriage is caused to deviate from a direct line, and the stave is cut to a corresponding form; in addition, as the carriage moves along by means of suitable contrivances, its upper surface may be caused more or less to incline, so as to alter the angle or bevel of the edge of the stave.

2nd. For hollowing the inside or concave surface of a stave, it is fixed on a carriage provided with a bed shaped to the curvature required. The stave is fixed on this bed inside uppermost, and the edges are forced downwards by means of screw clamps; in this position bent transversely, the stave is operated upon by adzes or cutters which level it along the center, and when it is released from the screw clamps, the sides rise again and it is hollow transversely from end to end.

3rd. Backing or giving to the external surface of staves the required convexity, is performed by an apparatus across which to and fro is fitted to work a kind of double plane, which alternately cuts from the sides to the center of the stave. This plane receives motion from a crank by means of a connecting rod, and it is guided by surfaces of a suitable curvature.

[Printed, 2*s.* 6*d.* Drawings.]

A.D. 1858, November 29.—N° 2712.

HADFIELD, George.—This invention relates to the construction of double barrels, carboys, and other vessels of capacity, by enclosing or inserting such and other vessels made "of glass, earthenware, gutta percha, and copper, or " other metals within a strong casing or envelope of wood, " for the purpose of securing the same from fracture; and " when using a costly material, such as gutta percha, copper, " or lead, as a lining, of avoiding the use of more material in " the structure of the inner vessel than would suffice to form " an efficient lining suitable for being brought into contact " with the substance to be preserved or contained in the " vessel. To this end, I make the vessel, which is to constitute the lining, of any required shape, say, for, example, " cylindrical, and surround it with staves, which are bound " together by hoops in the usual manner, and into the space " between the inner vessel or lining and the casing or envelope, I run liquid asphalte, plaster of Paris, or other " suitable filling, which will unite or cement the parts " together, and thus form a firm structure."

Upon the interior vessel is formed a neck to receive the bung, and a collar for the insertion of the tap; these project and come flush with the external surface of the wooden envelope.

[Printed, 10*d.* Drawing.]

A.D. 1858, November 30.—N° 2733.

COLYER, Joseph.—This invention relates to machinery designed for cutting, shaping, and jointing staves, and preparing the heads of casks, consisting in :—

1st. Apparatus for backing and hollowing staves. The stave blank is fixed in a holder on a horizontal table, and the shaping of its convex outer and concave inner surface is effected by rotating cutters of corresponding form. The cutters whilst moving along the bed have also a lateral motion imparted to them by means of a templet and guide, whereby they are whilst operating caused to approach and recede, and by this means the bilged form of the cask is produced.

2nd. Employs cellular plates curved and heated by steam for bending staves. The steam maintains a constant heat, and the staves are by means of screws, dogs, and clamps forcibly bent, so as to lie in close contact with the curved surface of the plate, and they are kept in that position until the reactional power of the fibres of the wood is destroyed.

3rd. Cask heads. The wood pieces are fixed on edge in a frame, which moves to and fro before a number of facing cutters or planing tools, mounted on the surface of a revolving disc; the frame as it is moved in either direction slowly along the bed or table of the apparatus by screw gearing carries the staves into contact with the planing tools, and whilst passing, their surfaces are made "true and even."

[Printed, 1*s*. Drawings.]

1859.

A.D. 1859, January 1.—Nº 1.

PITMAN, John Talbot.—(*A communication.*)—This invention relating to casks and barrels, refers to a mode of preparing the bung-holes for the reception of the bung or stopper; it (as described by the inventor) "consists in forming "a screw on the bung or stopper, and a corresponding one at "the hole in the stave of the barrel or cask by means of "burning. This mode will produce, in consequence of the "smooth charred surfaces, an air-tight fit, and one not to be "effected by any cut made by a tool, as in doing so the grain "of the wood would not permit a regular even surface to be "formed, but would give way." The operation is performed on the bung-hole stave before it is set up in the cask, and an oven designed for heating the screw burners which are employed for forming the screw threads, is shown and described.

[Printed, 6*d*. Drawing.]

A.D. 1859, January 13.—Nº 115.

GRIST, John.—This invention relating to the manufacture of wooden casks, comprises special modes and appliances for use in sawing out, shaping and jointing staves, raising or setting up a cask, making the heads, and chiming and grooving the ends.

Ordinary sawing machinery, either saw frames, band, or web saws, may be employed for cutting out the staves in conjunction for some purposes with a plate, which moves in guides and carries the staves when doublers or tongues are required to be cut. The jointing and shaping is effected by spindles rotating with cutters placed, one in advance to take off the rough, followed by others to smooth, cut, and finish, the stave being either fixed in a straight or bent position on a sliding plate, and the spindles moving to and fro as required. For backing staves two sets of rotary cutters are employed on spindles which oscillate respectively, one to the right and the other to the left, and vice versa, and as the staves pass over the cutters a curved form is given to them, varying from midlength to the ends, according to the form of cask required.

For raising or setting up a cask, an expanding table with a telescope pillar is employed.

"The staves are placed against the table, the head hoop, " "overrunner," and pitch hoop, are then put on, and the " table is contracted to allow the staves to be brought tight " together; the table is then pressed down in the telescope " joint, and the partially formed cask removed ready for " further operations."

The heads before being turned in a lathe, are, to prevent shrinking, steamed, and pressed between two heated plates.

When the shell of a cask is prepared for chiming and creuzing, the ends of the staves are cut to a bevil to ease the chime, for which purpose is employed "a tool fitted with a curvelinear " plane iron to suit the curve and bevil of the chime; also a " "jaggell" or cross-cutting iron to cut the creuze, and a " hollowing plane iron for cutting the hollow; this tool is " also fitted with a roller to work round the outside of the " cask, so that the creuze, hollow, and chime may be cut to " an uniform and equal depth from the back of the staves or " outside of the cask. The tool is placed across the top, and " the roller outside of the cask, and is worked round by " *hand.*"

[*Printed*, 1*s*. 10*d*. Drawings.]

A.D. 1859, February 5.—N° 331.

MABERLEY, FREDERICK HERBERT.—(*Provisional protection only.*)—This invention relating to apparatus for corking and uncorking taps and bottles, bunging and unbunging casks and barrels, consists as regards its latter application, in cutting a screw thread inside the bung-hole, and forming therein a shoulder against which the bung, which is also correspondingly screw-threaded externally, presses when screwed into the bung-hole, and so closes the barrel. The screw may be either formed inside the bung-hole or inside a bush, which is to be inserted therein. It is stated that this bung and bung-hole will be convenient to brewers, as the bung is easily removed and is not wasted, and in addition a vent peg to admit air into the cask is so screwed inside the bung, that the casks may be rolled about without fear of injuring it.

[Printed, 4*d*. No Drawing.]

A.D. 1859, February 8.—N° 359.

CRESSEY, THOMAS STOKES. —The object of this invention relating to the manufacture of wooden casks is to improve the machinery employed in combination with "a turning lathe" to facilitate the cutting of the heads "of casks of a suitable " oval form, such combined apparatus being put in motion by " the rotation of the wood which is to form the head of a cask. " The wood to form the head of a cask is pressed and held " against the face plate of a lathe by means of a bar, the ends " of which are turned at right angles and serrated or notched. " This bar is placed on the back point or centre, which, as is " ordinarily the case, is capable of being set up by a screw " towards the face plate. By these means the serrated or " notched ends of this bar are pressed against the wood, and " the wood is pressed and held against the face plate, so that " the wood and bar will be carried round as the face plate is " caused to revolve. On the back axis or centre is mounted " an oval double eccentric or suitable form for producing the " desired shape to the head. On this double eccentric or form " there are two projections which come on opposite sides of " the bar, so that as the bar revolves on the back centre, it " causes the double eccentric or form to rotate on such back " centre. The cutting tool is either fixed on a slide rest or is

" held by a workman on such rest, and the rest is caused to " move to and from the back centre by means of a connecting " rod attached by a pin joint to the rest, and the other end of " such connecting rod is forked, so as partly to embrace the " double eccentric whilst the two ends of the fork are acted on " by coiled or other suitable springs by which the connecting " rod will at all times be kept in contact with the double " eccentric."

[Printed, 10*d*. Drawing.]

A.D. 1859, April 23.—N° 1017.

GILLIES, James.—This invention relating to apparatus for marking or branding casks consists (as described by the inventor) " of an open cast-iron frame, on the platform or table of " which is placed an open-topped, elliptical, or other shaped " box or case of cast-iron, perforated all round for the admission of air and the escape of the products of combustion. " Within this box there are one or more vertical gas burners " of the "Argand" kind. These burners which are adjustable " as to height, are connected to the gas main by flexible " tubing, to allow of the necessary movement. Each burner " consists of an inner cylindrical shell closed at the top, and " perforated all round the lower part for the escape of the gas. " This inner cylinder is surrounded by an outer and larger " cylinder, also perforated for the admission of air to the " point of combustion, the flame rising up from between the " two cylinders. The flame or flames play directly against " the lower plain surface of the branding die plate of metal, " the upper working face of which is cut, cast, or otherwise " formed with the necessary names or devices in relief. The " platform framing also carries a bracket pillar piece, the " over-hanging eye of which has a large nut in it for the " reception of a vertical screw spindle, terminating at its " lower end in a horizontal presser plate. The top of the " screw spindle has a horizontal wheel or weighted arm upon " it, so that the arrangement resembles that which is adopted " in fly or punching presses. In branding cask end or head " pieces in this apparatus, each piece of wood is laid flat down " upon the operating face of the branding die plate on the " open top of the gas burner box, and the attendant then " *screws down* the presser plate by turning the wheel or

" actuating over head arm. In this way the wood is pressed
" hard down upon the heated branding plate, the pressure
" being kept up for a longer or shorter time, as may be found
" necessary. The effect of this combined pressure and heat
" is, that the branding plate gives a shallow but particularly
" clear, sharp, and indelible impression to the wood. Instead
" of gas flames, charcoal or other fuel may be used as the
" heating agent for the branding plate."

[Printed, 8*d*. Drawing.]

A.D. 1859, April 27.—N° 1055.

FANSHAWE, Henry Richardson.—This is an invention of apparatus adapted to the interior of casks for, whilst drawing off, preserving the contents from deterioration by contact with atmospheric air; and with it is also combined a contrivance for filtering. The inventor says :—

"I form a bag of vulcanized india-rubber or other suitable
" material, impervious to and insoluble in water; this bag
" must be of such size and construction that the elasticity of
" the rubber will with the atmospheric pressure cause it to
" expand to the full size of the butt, barrel, cask, &c. The
" mouth of this bag is made to fit round the edge of the bung-
" hole or aperture of the butt, barrel, &c., and down the
" centre of the bag I pass a flexible pipe, closing the bottom
" of the bag round said pipe so as to allow sufficient length of
" pipe to reach from the bunghole to the lowest portion of the
" butt, barrel, &c., as placed in the cellar for use. At the
" lower end of this pipe I affix a vessel (bell-shaped for
" instance) in heavy metal or material, the interior of which
" forms a filter. The upper portion of the pipe passes up
" and through the stopper at the bung-hole or aperture. The
" tube may communicate to the engine if for publicans' use,
" or it may form a syphon whereby the liquid may be drawn
" off. An index or guage rod may be passed through the
" bung-hole or aperture along with the flexible pipe aforesaid,
" and attached to a float resting upon that part of the expand-
" ing bag resting on the fluid; as this falls, so will the rod
" sink deeper and indicate or guage the quantity withdrawn.
" When the butt, barrel, &c., has become empty the stopper
" ring can be removed and the whole of the apparatus with-
" drawn. A small tap fixed at each end and opening inwards,

" or any ordinary air cushion valve may be attached to the " flexible bag aforesaid to allow any air contained (say where " the bag is required extremely large) to pass off when necessary. After use the bag & also the filter should be " cleansed."

[Printed, 4*d*. No Drawings.]

A.D. 1859, May 21.—N° 1258.

CRESSEY, Thomas Stokes.—This invention relating to the manufacture of casks, refers to an apparatus for cutting the staves and jointing their edges. It is supplementary to a former invention for which Letters Patent dated November 19 1858, No. 2630 were granted to him and according to which at the same time that the stave is cut to form by a circular saw, "a bevilled edge is produced to it by presenting " the wood to the saw in an inclined position, and in machines " of this description, before the cut commences, the wood is " set to the desired inclination, which remains the same all " through the cut, and a stave is thus produced having an " edge of a uniform bevil from end to end."

According to the present invention "in cutting staves for " casks of a superior description, it is desirable that the bevil " of the edge of the stave should increase in passing from " the centre towards each end. In order to effect this, I " employ a template or guide to govern the bevil of the edge " of the stave, in addition to the template or guide heretofore " employed to govern its contour. The wood to be cut I " prefer to mount on a carriage, such as is described in the " Specification of my former Patent above referred to, the " carriage being governed in a similar manner; but, in place " of supporting the back of the carriage on a straight rail, " as in that machine, I substitute for the rail a template or " guide, which, as the carriage passes over it, inclines it " more or less, and so regulates the bevil to which the edge " of the stave is cut."

[Printed, 10*d*. Drawing.]

A.D. 1859, May 27.—N° 1316.

HADFIELD, George.—This invention relates to the shaping, *preparing*, *bevelling*, and bending wood staves for the construction of casks and barrels, and to the apparatus employed. The staves for a given size of cask are cut as equal segments of the same circle, and whether bent or straight they are formed with a maximum thickness at the middle, decreasing towards the ends. This tapering form is given to the stave by means of a kind of saw bench, where, upon a horizontal spindle is mounted a circular saw. The stave is when presented to the saw held to the face of a guide attached to a sliding carriage. This guide is capable of oblique adjustment longitudinally, so that the plane of the saw, and the face of the guide are not parallel. The stave is formed at two cuts, one half its length at a time. The top surface of the table of the machine inclines from front to back, so that when the saw is performing the edging and jointing operations, the staves lying flat thereon, are presented at the requisite angle for their edges to meet face and face together when they are afterwards set up and trussed in the form of a cylinder or cask. The inclination of the table surface is adjustable to suit staves intended to form different sized casks. When casks with a more prominent bilge are required, the staves are forced and held in a bent position whilst the edging and jointing operation is performed, and for drilling dowel holes in the head pieces, a boring bit is fixed in the back end of the saw spindle, and an adjustable table is placed on brackets beneath.

An expanding chuck to be used for holding the barrels in the turning lathe, by which they are smoothed and finished externally, is also shown and described.

[Printed, 10*d*. Drawing.]

A.D. 1859, July 14.—N° 1663.

WALKER, WILLIAM. — (*A communication from James Wilson, Charles Green, and William Wilson the younger.*) —(*Provisional protection only.*)—This invention relates to the construction of barrels, kegs, canisters, and such like receptacles adapted to packing goods, and similar purposes; also to the machinery employed. These packages are made of thin sheet metal; both ends are enclosed by double seamed or lapped joints; they may be formed plain with corrugated or bulged sides, without soldering, welding, or rivetting, and black sheet iron may be used in their construction.

The apparatus for forming the rim or edge joints and fixing the heads consists of a vertical shaft that carries a disc wheel which revolves horizontally whilst the marginal edge of one head or end that, together with the cylindrical body of the barrel is held by the apparatus, is shaped or bent over to the required form by means of small rollers circumposed in sets or pairs in a circular frame that circumvests the disc. The first rollers perform the operation of "burring" or turning down the edge of the head to a right angle, the second bend the edge of the head or plate underneath a flange previously formed on the edge of the cylinder, which is called the "peaning" operation, and the third presses the seam down. When one end is complete, the package or barrel is turned upside down, and then the other end is closed in the same manner.

The sheet metal which forms the cylindrical portion or body of the barrel, is shaped either bilged or corrugated by forming-rollers; the two edges which meet and form the seam are to be secured by any of the ways ordinarily practised, and the heads or ends are cut out of the sheet by a stamping press.

[Printed, 4*d*. No Drawings.]

A.D. 1859, August 30.—Nº 1975.

CHAMBERS, CHARLES, and CHAMBERS, JAMES. — (*Provisional protection only.*)—This is an invention of a sawing apparatus, designed for cutting staves for casks and wood for other purposes, in forms that deviate from a direct line. " The inventors say "We mount a template on the rack or " table surface on which the wood to be cut is placed and " moved under the operation of the saw, which template " takes effect on pins projecting down from a fence, which " guides the wood under operation. This fence is jointed " to an arm moving on a fixed centre; by so mounting the " the fence it can be traversed across the machine, and occupy " a position parallel with the motion of the bed or rack, and " it may be inclined in any direction to that position, and " this during the motion of the machine. These parallel and " inclined positions, as also the cross traverse of the fence, " are actuated and controlled by the template taking effect " on the pins or fingers before mentioned during the action " *of the machine*, and whereby the wood being cut is moved

" so as to present it to the saw in such manner as to perform
" and cut curved lines, or lines running in zig-zag or irregular directions. The fingers or pins embracing the
" template are adjustable so as to admit of the necessary
" variations of templates for different purposes. The wood
" is kept up to the swinging or universal fence, which
" controls the position of the wood while under the operation
" of the saw by a movable fence or roller held up to the
" wood by a weighted lever, as well understood."

[Printed, 4*d*. No Drawings.]

A.D. 1859, October 6.—N° 2283.

NEWTON, William Edward.—(*A communication from Jean de Lihatcheff.*)—This invention relates to the construction of machinery designed for the manufacture of wooden casks, barrels, and similar vessels. These casks it is stated may be used without hoops until the wood becomes dry, when they are in consequence required; also, the various operations may be performed by unskilled workmen. The apparatus consist of:—

1st. A machine for planing the surfaces of staves, respectively convex and concave; this machine operates by means of a series of plane irons or cutters, disposed equidistant in a plane box or holder that is mounted on a sliding carriage. The staves are by suitable contrivances held fixed side by side on a horizontal table, over which to and fro in the direction of its length the planing tools are caused to move.

2nd. A machine for edging and jointing staves, consists of a horizontal bed and sliding table, lengthwise whereon a number of staves are fixed in a kind of lateral press, which forces the staves, placed inclining against each other, into a fixed curved position, whilst their edges are cut to the required curve and bevel by a horizontal saw, to which, by means of a crank and connecting rod, a reciprocating motion is imparted.

3rd. A machine for cutting the heads to a circular form, and shaping their edges to fit the end grooves in the staves. These heads are made thicker than usual and they are fitted flush with the ends of the staves, so that the casks have no chimes or projecting rims; the ends of the staves are fastened to the heads by means of nails.

[*Printed, 1s. 4d, Drawings.*]

A.D. 1859, November 5.—N° 2520.

MACKENZIE, Colin.—(*Provisional protection only.*)—This invention relates to the construction of a machine designed for cutting, dressing, and jointing staves for casks, barrels, and other wooden vessels.

The operation is performed by cutters of the ordinary construction, the staves are fed into the machine by rollers, and all the operating parts can be so adjusted and arranged as to be capable of dressing staves of different widths for the same barrel, with both bilge and bevel proportionate to the width, and also staves for the construction of casks and barrels of all sizes and forms, may be dressed and properly proportioned.

The invention with the exception of a V-guide whereby the staves whilst being cut are guided in a direct line through the machine, consists in the arrangement and combination of the " parts by which a variety of bulges, bevels, and cuts off " the side of the staves can be made of uniformly accurate " proportion, and the staves thus suitably prepared at once to " suit the work required. In this way the same machine is " adjustable to suit all kinds of cut required for large or " small, narrow or wide staves."

[Printed, 4*d*. No Drawings.]

A.D. 1859, November 8.—N° 2543.

HADFIELD, George.—This invention relates to the construction of machinery designed for the accurate and expeditious cutting of staves for the manufacture of casks and barrels. The wood prepared for the purpose in straight parallel pieces, is placed in the machine on an elastic steel bed, which is supported on adjustable blocks that, according as they are placed near to or further from the middle of the bed, will vary the form of curve to which the pieces are cut. The steel bed is carried by an adjustable swinging frame, by which means the opposite edges of the stave are in succession brought into position to be cut by a circular saw, which is mounted on a carriage that slides in guides on the machine bed, the stave being held by a pressing block operated by a hand lever and cam. The centres on which the frame swings have bearings in an adjustable bracket frame, and thereby they can be brought nearer to, or taken further from the stave on the elastic bed, as will be found necessary in shaping the edges of staves to suit casks of different sizes. "The swinging "frame moves between two adjustable stops to suit varying "widths of stave, and hangs at an angle to the vertical while "the cutting is proceeding. As the saw moves forward "it will make a downward cut into the wood, and cut the edge "of the bent stave to the required bevil and taper. When "one edge is thus shaped the frame is rocked to a corresponding angle at the opposite side of a vertical line drawn "through the axis of the fulcrum pins, and the next cut of "the saw will shape the other edge of the stave."

[Printed, 1*s*. Drawing.]

A.D. 1859, November 17.—N° 2606.

JONES, David. — (*Provisional protection only.*)—This invention relating to the manufacture of metallic casks, consists in the construction of :—

1st. A paint keg or cask, to which instead of fitting as usual a detachable lid with a handle, is made with a stationary handle, whereby independent of the lid, they can be carried either full or empty. "The handle is made of ordinary bar or "hoop iron, and slotted near to both ends Z form; the slots "act as a lock to the handle and are sufficiently long to "obviate the liability of the hand coming into contact with "the paint or other liquid. When the keg is filled and the "covering removed therefrom, the handle must be held "aslant to raise or lower it; when forced down it partially "rests upon the rim of the lid, and the edge of the mouth of "the cask, and while it adds to the strength of the body it "also serves as a stay and support to the lid. The handle is "connected with the body by means of suitable rivets or "screws by using the latter in conjunction with nuts and "washers. Not only is leakage prevented, but the handle "can be adjusted or removed if necessary."

2nd. A metallic cask wherein to pack nails and solid substances. The inventor says "I take a bar of iron and shape "both ends to fit the interior of the mouth of the cask near to "its edge; the said bar is rivetted or otherwise connected "with the body, and to this bar I rivet or screw a fixed

" upright handle of a desired length, which will allow of a " series of such like casks being piled upon their respective " ends or placed against each other without occupying additional space in the carriage or removal of the same, the lid " or covering of the cask having a slot near its centre, passes " over the handle and rests upon the surface of the flat bar; " by these means the cask is strengthened, and the security " of the lid increased."

[Printed, 4*d*. No Drawings.]

A.D. 1859, November 24.—N° 2663.

HUBART, Albert, and CANTILLON, Victor.—This invention relating to the manufacture (in all sizes) of casks of glass, and to the apparatus employed, consists in making such casks " by moulding them in separate parts or halves, and afterwards joining such parts with a band of glass by means of " blow pipes. The machine employed for moulding and " joining consists of a frame composed of two uprights or " standards arranged at a suitable distance apart, each standard " having a horizontal shaft working in bearings therein. Upon " the end of each of the horizontal shafts, and between the " two standards, are fitted cast iron moulds, which are made " in three parts, two of such parts forming the sides of the " moulds, and the third forming a movable bottom which is " adjustable by a screw. The moulds are caused to rotate " during the soldering or joining operation by means of " toothed wheels fitted on the shaft behind the moulds, such " wheels gearing into pinions upon a shaft above. To the " toothed wheels are fitted hoops and bars for holding the " moulds in their places when the bottoms are removed. In " connection with the toothed wheels, and upon each of the " shafts which carry the moulds, are two counterpoises for " the purpose of keeping the moulds in a proper position for " soldering, and while they are receiving a rotary motion. " The moulds are drawn together or in contact by means of " set screws upon the ends of each of the horizontal shafts, " and have a swing motion imparted to them so as to cause " them successively to assume the position for moulding and " soldering. Upon vertical guides in the upper part of the " frame are two cast-iron cores for distributing uniformly the " liquid glass round the inner sides of the moulds, and

" giving the required thickness and form to each half cask. " Movable rings are attached to the cores, and rise with them; " such rings serve to lengthen the mould, and also leave " uncovered the parts of the cask to be joined. The cores are " moved upon the guides by means of a three-threaded screw; " pulleys and cords are arranged upon the upper part of the " machine for raising the cask after being soldered, and for " conveying it to the oven for rebaking."

[Printed, 10*d*. Drawing.]

A.D. 1859, December 14.—N° 2848.

LESLIE, George.—This is an invention of a self-acting contrivance for keeping casks (emptied of their contents) free from mustiness or mould, and in a state fit for re-filling without the trouble of cleansing. The hole for the tap is to be made larger than usual, and a piece of vulcanized india-rubber or other suitable elastic material having a horizontal slit cut in it in length corresponding with the diameter of the hole in the cask is placed over it; upon the first is laid a second slit piece of vulcanized rubber, the slit being placed vertical or across the horizontal slit of the first piece, and corresponding in length to the diameter of a hole made to receive the tap is a wooden cover, which is fixed on over the india-rubber, the two holes, viz., the one in the cover, and the other in the cask directly corresponding. When the tap is inserted in the hole in the cover, it passes through and opens the slits in the pieces of rubber, and when the cask is empty the slits close again as the tap is withdrawn.

[Printed, 4*d*. No Drawings.]

A.D. 1859, December 29.—N° 2975.

CRESSEY, Thomas Stokes.—This invention relates to the operation of trussing casks, and to the apparatus employed. The staves are circumposed or set up as usual in three hoops; at one, the lower end, the staves are brought close together, but their upper ends are left a distance apart from each other. The half formed cask is then inverted and placed over a fire contained in a metal basket disposed upon the center of a table or bed, around which, at regular distances apart, is a series of levers, *each lever* being situate on a radial line pointing to the common center of the apparatus. The outer ends of these levers are jointed to the bed plate, and the other or inner ends carry curved crossheads which are all simultaneously drawn down by a series of links having their upper ends respectively jointed to the inner ends of the levers, and their lower ends to the periphery of a horizontal disc, placed concentric beneath the table or bed, upon the lower end of a vertical screw from which by means of a worm and worm wheel it obtains motion. The curved ends of the levers as they descend press simultaneously against the open ends of the staves, and gradually force them into correct position together, the heat from the fire having softened and made the wood more easy to bend. A jointed hoop is then placed on the ends to secure them in their bent form, which they retain when the wood is cool. The levers are then raised, and the trussed cask removed to be finished by the ordinary process.

[Printed, 10*d*. Drawing.]

1860.

A.D. 1860, February 7.—N° 321.

PROU-GAILLARD, AUGUSTE.—This invention relating to the construction of casks and similar vessels for containing either fluid or solid matter, is thus described by the inventor :—

"The casks are formed of wood, and when dry, iron hoops " are forced on their periphery in the ordinary way, and fixed " thereto by means of short screws. To make them perfectly " water-tight, I apply to the joint of the staves a coating com- " posed of flour and ashes mixed together, and afterwards " cover them with a strip of sheet iron nailed throughout " their length. This strip of sheet iron passes under the top " hoops, and is held there by the same screws, some cut parts " thereof being turned up and applied on the joints of the " staves, which joints are filled with the coating above-men- " tioned. On the heads of the casks are applied bands of iron " fixed by means of like short screws in order to prevent their " riding ar rising one above the other, and I adopt the same " *method of* covering and luting the joints as for the sides " *already described.*"

Instead of the flour and ashes named above, a composition consisting of ox blood, cow dung, clay, and sulphur may be substituted for coating the joints. When rushes are introduced in the joints the composition is used thinner, and instead of iron, strips of other metals, or of gutta percha, leather, or cloth, may be employed.

[Printed, 6*d*. Drawing.]

A.D. 1860, February 27.—Nº 538.

SHORE, Sydney Foye.—The object of this invention is to prevent the fouling of, and bad smells in empty beer casks, which is often found to be the case when returned from the consumer, in consequence of the vent and tap holes when casks are emptied having been left unclosed. It consists in fitting plugs so attached to springs that cover the holes inside casks, that when the tap or vent peg is withdrawn, the plugs enter the holes from the inside, and prevent further ingress of the atmosphere. The plugs are fitted into the holes and held by the springs, which yield when the tap or the vent peg is forced in and the plugs are pushed out, but are brought forward immediately by the reaction of the springs and follow the tap and vent peg into the holes from the inside respectively at the same moment that the latter are withdrawn, so that fresh air cannot enter, and exchange of air is prevented. Metal springs when employed should be coated with other metals or substances not liable to produce injurious effects on the liquor. Instead of attaching the plugs to metal springs they may be fastened to laths hinged to the inside of the cask and kept constantly under the elastic tension of bands of india-rubber or other elastic material.

[Printed, 6*d*. Drawing.]

A.D. 1860, March 26.—Nº 775.

MARTIN, Charles, and PIDDING, William.—(*Provisional protection only.*)—This invention relates to the employment of several substances in a combined pulpy state for the manufacture of paper and various articles, including casks and vessels. The materials and proportions thereof employed to form the pulp, consist more or less of animal and vegetable fibre, sawdust, glue, resin, caoutchouc, lime, fatty and colouring matters, according to the purpose required, whether the article is to be hard, soft, elastic, insoluble, or uninflammable. The pulp or compound is caused to flow into or around moulds perforated or covered with wire gauze through which the water escapes, leaving an internal lining of the material if the pulp flows inside, or an external covering if outside, the mould in the latter case being submerged in the pulp and its interior put into communication with a vacuum chamber, or when the article is formed inside the mould the latter is placed inside the vacuum chamber.

The effect may also be produced by compression.

[Printed, 4*d*. No Drawings.]

A.D. 1860, March 31.—N° 831.

SHERIDAN, John.—This invention relates to the manufacture of metallic casks and vessels which, instead of being made of sheet metal previously coated with tin or galvanized, are made of plain sheet iron or other metal, and when the heads or ends, hoops if any, and other parts are fixed and the casks or vessels are cleansed and in a fit state to be coated, they are immersed bodily in a bath of liquid metal which also flows inside, and at this one operation the casks and vessels receive a metallic lining and coating, all the joints, seams, and connections being at the same operation thoroughly soldered. By this means the process of first coating the sheet metal, and the dipping or soldering of the chimes, joints, and seams of the manufactured casks is reduced to one effective operation, there being a suitable opening in casks provided for the influx and reflux of the molten metal to and from the interior.

[Printed, 4*d*. No Drawings.]

A.D. 1860, May 4.—N° 1116.

REID, Henry.—This invention relating to the manufacture of hoops for hooping casks, barrels, and articles of similar construction, consists in making such hoops from iron, steel, brass, or copper wire and nail rod, transversely either square, round, oval, or triangular, or of other polygonal section, the advantages being (it is stated) economy in make and additional strength. Any size of wire up to 24 Birmingham gauge is suitable for the purpose, either used singly or twisted in strands cut to the proper length, and the ends, in the case of a single rod or wire, being connected together by means of a "sheet

" bend " or slip loop; when two or more strands of wire are employed their ends are all welded together. Another method of securing the ends consists in soldering them together, but this mode (it is stated) is not so expeditious as either tieing or welding. When nail rod, or wire of iron is used, the metal may be galvanized. By heating these hoops previous to placing them on a cask, they may, in consequence of the contraction of the metal whilst cooling, be made to hold very firmly, and the tied ends of single wires may be passed through holes in the stave and be drawn tight by twisting them together inside.

[Printed, 6*d*. Drawing.]

A.D. 1860, May 25.—N° 1296.

HUBART, ALFRED, and CANTILLON, VICTOR.—This invention, relating to the manufacture of casks and barrels of glass, is supplementary to a former invention, for which Letters Patent were granted to these inventors November 24, 1859, No. 2663. The said former invention consisted in making glass casks by moulding them in separate parts or halves, which were afterwards united or joined together with a band of glass by the aid of blow pipes and several jets or burners, the process being applicable to the manufacture of casks exceeding in capacity 5½ gallons.

According to the present invention casks of less capacity than 5½ gallons are made by blowing them in two part or parting moulds of wood or iron. The two parts of the mould when coupled in position together inclose a cavity the desired form of the cask, and the glass being placed therein is blown until it attains the same configuration, the tap hole being formed by piercing with a red hot rod of iron. The process is applicable to the manufacture of casks of any required shape, either to lay on a stand or be placed upright, standing on one end. Several examples of horizontal and upright casks varying in form are referred to and exhibited on the drawing.

[Printed, 6*d*. Drawing.]

A.D. 1860, June 5.—N° 1382.

HADFIELD, GEORGE.—The object of this invention, relating to the manufacture of casks and barrels, is to facilitate their construction by the aid of new mechanical arrangements in combination with machinery employed for cutting the staves; to increase the strength of casks by the mode of construction, and their durability by the preparation of the wood.

1st. The auxiliary contrivances adapted to the machinery employed for cutting staves, relates to a provision that is made for advancing and retracting the two circular saws, which are made capable of cutting the opposite edges of a stave, either simultaneously or separately, by a vertical adjustment of the slotted radial guides whereon they are mounted, so as to determine the width of the stave when the saws act simultaneously, and also the angle of the cut. The adjustment is effected by a lever which moves over a graduated scale on a segment plate, and the wood stave, whilst the saws operate, is carried between them on a sliding carriage; when the staves are of different widths the saws are brought alternately into action, their position being regulated by adjustable stops on the segment plate, against which stops the lever is by turns brought into contact, thereby placing the saws in position for cutting at a suitable bevel first one and then the opposite edge of the stave, which is fixed on the carriage in a bent position corresponding to the required bilge of the cask. A modification of the first arrangement is also described.

2nd. Strengthening casks by attaching to the ends of the staves by dowelling or otherwise cross pieces of wood which form rings when the staves are set up and form casks; these rings are grooved to receive the heads. It is also proposed to line soft wood casks with thin oak staves, which cover or underlay the joints of the outer staves.

3rd. The mode of preparing staves with a view to render them more durable, consists in extracting by the aid of a vacuum chamber, the air from the pores of the wood, and filling up with gelatine dissolved in water containing ammonia; the gelatine combines with the tannin, and forms what is called "tanna-gelatine," which is said to be insoluble.

[Printed, 2*s.* 2*d.* Drawings.]

A.D. 1860, June 28.—Nº 1566.

BLAKELEY, James, and **BLAKELEY**, William Henry.—This is an invention of cutting apparatus which operates by means of cylindrical saws, adapted amongst other applications to the formation of staves for casks and barrels, the object being to save the slab which is cut off, and which heretofore (it is stated) has been cut or chipped off and wasted by clearance cutters employed in combination with similar saws, which have been fixed upon the revolving axes.

The object of the invention is accomplished by cylindrical saws having serrated teeth at one end, and a clear passage through them. The saw rests upon, and is driven by a friction drum and endless belt, against which it is pressed by a roller eccentrically placed inside the saw, which is thereby kept down steadily in contact with the band on the top surface of the drum, the friction whereof is not entirely depended upon for driving the saw. The upper half of the saw appears above the table of the saw bench, and has a clear passage through it. Suitable appliances are provided for preventing any end movement of the saw, and a modification of the mode of driving is also described.

[Printed, 10*d*. Drawing.]

A.D. 1860, August 14.—N° 1962.

LESLIE, George. — (*Provisional protection only.*) — The object of this invention for preserving casks, is to prevent by the exclusion of the atmosphere their becoming mouldy when emptied of their contents and the tap is withdrawn. This result is effected in several ways by appliances respectively employed either externally or internally, whereby the tap hole is closed automatically when the tap is drawn out. The inventor says :—" If fastened on the outside I increase the size " of the tap hole to admit a tube or a frame of wire to act as a " guide to a spring of metal, vulcanized india-rubber, or other " suitable material attached to a cork or stopper, which closes " the whole on the withdrawal of the tap. The frame or tube " is fastened to a wooden block made to fit the enlarged hole, " which has a hole in its centre the usual size of the tap hole, " and the whole is secured to a plate of metal, and fastened to " the cask. I also take a circle of elastic material larger in " diameter than the tap hole of the cask, and attach to it a " straight, spiral, or other suitable spring, either enclosed in " a barrel or not as may be found best; this is secured to a " metallic frame, with a hole in its centre about double the " *size of the tap* hole. I then employ another piece of vul-

" canized india-rubber or other suitable material the size of
" the frame, across which I cut a slit in the centre about two-
" thirds of its diameter; this I also secure to the frame under
" the first mentioned, or to the cask over the hole to be
" stopped as may be most convenient, and fix the whole inside
" the cask. I also attach a circular piece of suitable material
" to the end of a flat spring, the other end of which is to be
" fixed to the cask head in such a manner that when the tap is
" driven in it pushes the spring back, and when withdrawn
" the spring forces the material over the tap hole, which
" having been previously covered with a piece of vulcanized
" india-rubber, slit in the manner previously described, forms
" a valve which effectually excludes the air."

[Printed, *4d.* No Drawings.]

A.D. 1860, September 27.—N° 2350.

WINRAM, James.—This invention relating to the manufacture of wooden casks and barrels, comprises a machine for cutting the edges and dressing the staves. The two edges of the stave are cut simultaneously by revolving cutters mounted in a frame on pendent axes, the upper ends whereof are jointed to an adjustable center above, so as to be capable of preparing staves for casks of various sizes. The staves are bent and carried forward between the cutters by two endless chains, composed of solid links jointed together edgewise. Each chain passes round two sexagonal wheels or pulleys, respectively placed apart at an adjustable distance, so that the required tension on each of the chains may be regulated. The links of the chain so graduate in width that a series of convex curves is formed by the perimeter of one chain, and by the perimeter of the other a corresponding series of curves which are concave, the curved space between being occupied by the stave. The inside edges of the links of the chains as they are moved forward simultaneously, slide along and are supported by guides respectively above and below the operating lengths or parts of the two chains, which bend and carry in succession the staves between the cutters. The actuating power is applied to the axes of the two sexagonal wheels, around which the chains respectively pass and return from the back of the machine, where the staves, as the chains separate, are set free.

[Printed, 10d. Drawing.]

A.D. 1860, October 8.—N° 2429.

COPE, David.—This invention, relating to the construction of drums, kegs, casks, and similar packages, refers more particularly to those kinds made with metal chimes and ends, and generally used for containing such articles as turpentine, oils, and paints. Over the extreme ends of the cask, so as to embrace the ends of the sides or staves and the flange of the heads, is placed a hoop, having in transverse section a U-form; the ends of the cask are protected by this hoop, which by dipping or otherwise is soldered to the other parts.

A modification of the hoop consists in bending over inwards the ends of the sides or staves, so that they clasp the flange of the heads at each end of the cask; this plan dispenses with the hoop.

The machine employed for bending over the ends consists of a pair of side frames which support a pair of roller spindles whereon, outside the frame at one end, is fixed toothed gearing for giving motion to both spindles when one is actuated by a handle or otherwise. Outside the opposite frame on the other end of the spindles, one on each, is fixed a pair of bending rollers, and between them, placed to revolve on the end of a stud axle, adjustably fixed nearly at a right angle to the spindles, is a shaping disc or piece. The periphery of this shaping piece passes between the rollers, and when the metal is passed between them it is bent and turned up to the required form.

[Printed, 10*d*. Drawings.]

A.D. 1860, December 15.—N° 3088.

KINDER, Arthur.—This invention, relating to machinery for sawing wood by means of band saws, refers more particularly to the auxiliary appliances employed, which render the operation more effective in practice, and the apparatus less liable to derangement. It consists in:—

1st. "The employment of guides through which the saw " runs either vertically or horizontally, suitable recesses being " formed for the reception of packing whereby the saw is " maintained in an even temperature throughout its width, " and consequently the warping or twisting of the blade is " *prevented. In combination with a band saw arranged as*

" above described it is proposed to use a convenient arrange-
" ment of variable feed, consisting either of a reverse cone
" motion or a friction disc and bowl or pulley."

2nd. "Cutting curved work, such, for example, as the edges
" of cask staves, by a band saw placed either vertically or
" horizontally, and guided to the desired curve by passing
" through a curved slot in a guide block provided with
" packing as above described, the saw being sufficiently wide
" to project below the guide block and pass through the
" material, the cut being at the same time made in the
" direction of the length of the stave."

3rd. "The use of a band saw suitably packed for jointing
" bent staves for casks, the cut being effected in the direction
" of the length of the stave."

4th. "The use of nipping rolls carried by the two arms of
" a pair of nippers which are pivotted to a fixed support and
" capable of being guided laterally so as to suit the work
" passed between them and ensure the cut which is made by
" the band saw being always parallel to the side of the
" material operated upon."

[Printed, 1*s.* 4*d.* Drawings.]

A.D. 1860, December 20.—N° 3129.

HADFIELD, George.—This invention relates to the preparation and bending of wood for cask staves, compressing wood for cask heads, shaping unbent staves, shaping, chiming, and grooving staves, and whilst finishing cask heads cutting them to an oval form.

1st. Bending staves, which when prepared or sawn to a regulated size, are placed in tiers side by side upon a carriage, and supported only beneath their ends. Across their mid-length, having laid thereon a strong convex block, the carriage is run into a steaming chamber, through a threaded bush in the top of which there is a strong screw that is turned by suitable gearing outside. The screw pressing direct upon the convex block forces it down, and by this means all the tiers of staves when softened by the steam are bent simultaneously, the block being held down by detent catches attached to the carriage, upon which the staves remain to cool and set to the bent position after the carriage is withdrawn.

2nd. Compressing the wood of staves and head pieces previous to shaping and jointing them, and subsequently submitting the finished cask to the action of steam to cause expansion and the consequent tightening of the hoops.

3rd. Shaping staves in the straight unbent state is effected by a machine in which, mounted at suitable angles capable of adjustment to suit staves for making different sized casks, are two circular saws or cutters, fixed on spindles which have their bearings at the lower end of two vibrating arms. The wood is clamped on a rocking table supported on adjustable trunnions.

4th. A machine for chiming and grooving the ends of staves by means of revolving cutters at one operation. The spindles carrying the cutters are mounted in swinging arms, the centre of motion whereof is adjustable to the curve of the intended size of the cask; the cutters operate upon the staves singly, each stave being fixed beneath the path of the cutters on two adjustable blocks attached to the machine bed.

5th. A machine for cutting or shaping the heads of casks or barrels operates by means of two sets of cutters capable of being alternately thrown in and out of action at each quarter rotation of the cask head, so that the wood of the head, which revolves slowly in one direction, is cut only in the direction of the grain. The cutters operate above and below, chamferring the edges of both surfaces simultaneously, the head when finished being slightly elliptical.

[Printed, 4*s*. 6*d*. Drawings.]

1861.

A.D. 1861, January 15.—N° 112.

STEVENS, Charles.—(*A communication from Mr. Loyer.*) —This invention relates to a mode of treating wood, which is reduced to a plastic state and capable of being moulded in various forms, including staves for casks, which when bound together with hoops make (it is stated) excellent receptacles for grain and flour. The wood is first cut into fine shavings, which are *boiled in* a caustic solution until the fibres separate.

Soft woods, such as poplar, lime, birch, and fir, are preferred. The material is afterwards subjected to several days' fermentation to render it soft and glutinous, and the fibres are finally disintegrated, bruised, and mashed by passing it through a machine containing a cylinder furnished externally all round in the direction of its length with a close series of knife-edged projections, which operate upon the fibres in conjunction with a block which has a ribbed surface, and is placed in a receptacle similar to those employed in the trituration of rags, the block being so disposed that the ribs thereon lie, when in contact, obliquely across the knife-edged projections on the cylinder. Roots of trees bruised and treated in the same way may be used to make the plastic substance, as also tan, either new or old.

[Printed, 6*d*. Drawing.]

A.D. 1861, January 18.—N° 140.

ARGENT, Edward.—This is an invention of apparatus for tilting casks in order that all the liquid contents may be run off. Secured by hooks or otherwise along the crown or ceiling of the vault or cellar is a rod, fixed directly over the back ends of the casks, or a range of casks, and in a line therewith. The upper end of the lifting apparatus is provided with a hook, which is for the purpose of hanging it to the rod along the ceiling above, and the lower end or part is furnished with a hook or clip, which catches hold of the back end of the cask beneath the chime of the bunghole stave. The clip is attached to the end of a screw which by different contrivances, as shown in the several modifications, is caused to shorten the distance between the hook and the clip, and so contract the apparatus lengthwise that the end of the cask is gradually lifted.

[Printed, 8*d*. Drawing.]

A.D. 1861, May 11.—N° 1199.

BROOMAN, Richard Archibald.—(*A communication from Edmond Armand Louis D'Argy.*)—(*Provisional protection only.*)—This invention (as stated by the patentee) consists in "compressing or bringing close together the particles or fibres "*of wood*, made of any desired form, into as small a compass as "may be without damaging the wood, by means of rolling

" machines, hydraulic presses, screw plates, or other power, " and afterwards causing the said wood to expand by bringing " it in contact with liquid. Wood acted on in this manner is " applicable, among other uses, to the construction of hollow " bodies such as casks, for closing up spaces, for caulking, " for the manufacture of any surfaces or articles required to be " rendered staunch."

[Printed, 4*d*. No Drawings.]

A.D. 1861, May 15.—N° 1240.

DOULTON, **Henry**.—This invention relates to the construction of vats, in form cylindrical, rectangular, or otherwise, from clay compressed into the shape of tiles or staves by forcing the material into or through suitable moulds or dies. Staves for small cylindrical vats are moulded sufficiently long to reach the full length of the vat and have at the lower end a sector formed piece projecting inwards at right angles, so that when the staves are collectively circumposed the sector-shaped pieces fit together and form the bottom. The edges of the staves are dovetailed or grooved to receive tongues of corresponding form, the interstices in the joints being afterwards filled up by running in a suitable cement. Large size vats of rectangular, cylindrical, oval, or other form, are built up with tiles or blocks suitably dovetailed or grooved to joint together or receive tongues, cement being afterwards used to make the joints fluid-tight. These vessels are supported externally by hoops or bands of wood or metal, by preference made with screw couplings. Instead of the grooves and tongues, in some cases, one edge only of the stave or tile may be grooved and the opposite edge may have a projecting rib to fit into the grooved edge of the adjacent stave or tile.

[Printed, 4*d*. No Drawings.]

A.D. 1861, May 17.—N° 1252.

BÉZIAT, **Jean Cyrille Marius**.—This is an invention of what is termed a "tilting jack" or apparatus designed for lifting the back ends of casks without disturbing the lees or sediment.

This apparatus, as described by the inventor, "consists " principally of a bar or lever of iron provided at one end

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" with a pointed fork and at the other with a roller. At or " near the centre of this bar or lever is a metal roller to which " is attached a strap of leather or other material having a hook " at the other end. To this roller is fixed a spur wheel driven " by a small pinion, or a worm wheel driven by a worm, the " said pinion or worm having a winch-handle attached thereto. " It will be evident that upon placing this apparatus in a " diagonal position above a cask, the fork resting against one " of the front hoops and the roller against the wall behind, if " the hook be placed under the backward end of the top stave " and the handle be turned, the strap will be wound on the " roller, and the cask will be tilted forwards. A wedge or " block of wood may then be placed under the cask, and the " apparatus be removed and applied to another cask, so that " any required number of casks may be tilted with one " apparatus."

[Printed, 6*d*. Drawing.]

A.D. 1861, June 8.—N° 1469.

CLARK, William.—(*A communication from Mr. Louis Désiré Trannin.*)—This invention relates to various methods of lining or coating wooden casks with a view to render them fluid-tight; also to the construction of metallic casks.

Wooden casks are coated internally or externally with thin sheet metal which, when applied inside a wood cask, is forced into contact therewith by the expansive force of steam or air, or water under pressure. The casks are made in two parts on foundation frames, the parts being subsequently hooped and fastened together. Casks of wood are also coated internally with a kind of mineral cement composed of milk clotted with vinegar, white of egg or albumen, and sifted filings of cast iron or other metal, mixed with quick lime to form a paste of suitable consistence. Casks are also lined or coated with a " filamentus ligneous mastic," consisting of sawdust, resin or india-rubber, pounded brick, sand, quick lime, and iron or other metal filings. These ingredients are mixed to form a paste which is applied to the two half parts of casks, and a layer of tow or other fibrous substance is laid over it; then another coating of the plaster and a second coating of the tow is applied, which is again dressed over with the plaster. The bottoms and heads are also coated in the same way. In some cases in order to render wooden casks less porous, either a solution of copper, or pyrolignite of iron or other metal, is introduced and forced into the pores of the wood by hydraulic pressure. The interior surface of the bottoms or heads of casks is metalized by the aid of an amalgam composed of tin and mercury; the mode of fixing the heads and parts together is also described.

The body part of metal casks is made of one piece of galvanized iron or of other sheet metal rolled to the required size, the two ends or edges which form the seams being turned back in opposite directions so that they hook or clasp together and are afterwards soldered. The chimes are strengthened by metallic hoops, and the margin of the heads, which are either flat or convex, is turned up to form a flange all round; the heads slide into the ends of the cask and rest upon the metallic hoops. Both ends are closed in this way, solder being afterwards applied to the joints to make them fluid-tight. Metallic hoops of T-iron are also used internally about the midlength to support the sides.

[Printed, 8*d*. Drawing.]

A.D. 1861, July 30.—Nº 1899.

CRESSEY, Thomas Stokes.—This invention relating to the manufacture of wooden casks refers to an apparatus designed for shaping or chiming the ends of casks preparatory to the reception of the heads. After (as stated by the inventor) " the staves have been put together to form a cask, and whilst " they are held together by the hoops which are employed to " hold them previous to the cask being finally hooped, the " inner face of the ends of the staves is subjected to the action " of a rotary cutter or cutters, suitably formed to make the " groove in the staves for receiving the outer edge of the " head, and also to bevil the ends of the staves and to cut " away the middle portion of the staves just above the groove " so as to make the interior of the cask at that point circular. " The cask to be acted on is supported at each end on two " rollers at a short distance apart, and the end which is to be " prepared for receiving a head is held up to a flat plate, in " front of which is a wheel of slightly less diameter than the " inner diameter of the end of the cask. The inner face of the

" cask is pressed up against the under side of this wheel by " means of the two rollers which support the end of the cask " which is being acted on; these two rollers being carried by " a spring lever, the spring of which constantly forces the " cask upwards against the wheel above-mentioned. The " rotary cutter acts on the staves whilst they are pressed by " the rollers against the wheel, and consequently cuts uniformly each of the staves, the cask being rotated slowly, so " that each of the staves passes in succession under the cutter. " The cask is rotated by means of a band passing around it, " one end of the band being attached to the hoop around that " end of the cask which is being acted on, and the other end " being attached to a drum, which is caused to rotate slowly, " and wind the band around it, thus rotating the cask. The " rotary cutter is carried by a frame which is capable of " turning upon axes, so that the cutter may be lifted up out " of the way when a cask is being placed into the machine. " When one end of a cask has been prepared in the manner " above described, the cask is turned round and the other " end prepared in the same manner."

[Printed, 10*d.* Drawing.]

A.D. 1861, August 9.—N° 1981.

MOTT, Albert Julius.—This invention is designed for the purpose, whilst drawing off the liquid contents of casks and closed earthenware vessels, of preventing the atmosphere which is necessarily admitted, coming into contact with the surface of the liquid which remains. This result is effected by the use of a flexible bag or tubular lining, attached at the upper end to the top or rim of the cask or vessel and held in some cases by the pressure of the head or cover, which is drawn down upon the top edge of the bag as it rests upon the rim, by external bolts, which pass down outside and through a projecting margin with which the bottom is furnished. The lower end of the bag is fixed all round to the edge of a dished circular disc, which forms the bottom of the bag and floats upon the surface of the liquor, sinking therewith as it is drawn off, the atmosphere being admitted through a central hole in the head, only enters the bag, which separates it from the liquor.

A modification of the bag or lining consists of a kind of *flexible piston* which floats upon and sinks with the level of the liquid. This piston is composed of a top and a bottom disc, respectively fixed in the ends of a tubular diaphragm, made of a flexible air-tight material. The bottom of the piston floats on the surface of the liquid, and the top is supported by the air contained within the piston, the flexible sides being forced outwards into contact with the inside of the vessel, which in this case is to be composed of sheet metal.

[Printed, 8*d*. Drawing.]

1862.

A.D. 1862, January 1.—N° 11.

RHODES, BENJAMIN.—This invention relates to the construction of cylindrical and other vessels and articles, such as pipes, bends, jars, casks, gutters, and various other things by overlayers of paper, looped or elastic and other fabrics of cotton, hemp or other suitable material, such successive layers having severally between them an intermedium or coating of bituminous or other suitable matter.

The paper or fabric is coiled over the surface of a core pattern or model of the pipe, cask, or article, such core or model in the former case being in one piece and for casks, jugs, and such like vessels in two or more parts. The fabric may be made closely to overlay, one layer being pressed upon the preceding by a pressure roller, the fabric either passing through the bituminous matter heated to a state of liquefaction or the latter may be applied by dipping. In like manner various articles, to preserve and protect them from moisture or the effects of the atmosphere, may be coated in the same way. The final shape is imparted to the vessels and articles by the external pressure of moulds, made in two or more parts.

[Printed, 8*d*. Drawing.]

A.D. 1862, January 8.—N° 55.

STENHOUSE, JOHN.—This invention relates to a mode of treating animal and vegetable substances with a view to render them less pervious to air and liquids. The substance used for the purpose is paraffine, either in the solid state or dissolved in highly rectified coal tar, petroleum, naptha, or contents of the cask then flow to the fore-end and the cask continues to tilt gradually more and more until all the clear liquor has run off.

[Printed, 8*d*. Drawing.]

A.D. 1862, August 29.—N° 2396.

LEFRANC, François Henry.—This invention relating to the manufacture of casks and barrels, chiefly refers to the construction of the apparatus employed for sawing and shaping staves, chiming, and finishing casks.

A number of pieces of board or stave blanks are piled one upon another and fixed by screw clamps in a vertical frame, which is caused to rise gradually between vertical guides by a superponderant weight attached to the end of a rope that passes over a pulley and is fastened to the upper part of the frame. Across the apparatus in front of the frame a straight saw is mounted to slide horizontally to and fro, which motion is obtained from a crank by means of a connecting rod. The frame rises as the saw operates in succession on the edges of the pile of stave blanks, and by this means the edges of a large number are speedily cut, either square or bevelled, in which latter case the blanks must be fixed in the frame in a position suitably inclining.

A machine for bevelling and shaping the edges of staves suitable for bilge casks operates by means of a circular saw, the height of which is adjustable. The staves are fastened upon tables adjustable to a suitable incline in relation to the plane of the axis of the saw, by which means the bevel of the cut on the edges of the staves may be altered to suit casks of different sizes. There are two inclining tables, one on each side of the saw.

When the staves are set up and secured in the usual way by truss hoops, the unfinished cask is placed in a kind of lathe, where it is shaved externally, and the ends shaped and trimmed.

[Printed, 8*d*. Drawing.]

A.D. 1862, September 18.—N° 2557.

WHITEHEAD, Peter Halstead.—This invention relates to the construction of a cask stand or "stillage" designed for supporting and tilting casks. The cask lies on a hollow frame or cradle, made capable by means of a worm and toothed quadrant of oscillating with a horizontal shaft which passes transversely through the frame, and its ends projecting rest in bearings supported by two standards or side frames. The toothed quadrant is fixed on one end of the shaft, and the worm is carried by a spindle mounted in bearings attached to one of the standards. The spindle is actuated by a handle on its free end which projects forwards, and when turned, the cradle may be tilted forward and brought into a vertical position to receive the cask, and then by turning in the opposite direction, the frame with the cask is lifted and turned backwards over the central shaft in a horizontal position. The tilting of the cask when its liquid contents have been nearly run off, is effected by the same means.

[Printed, 10*d*. Drawing.]

A.D. 1862, October 3.—N° 2677.

GREENWOOD, Thomas.—This is an invention of apparatus designed for sawing wooden planks or boards into staves, suited for covering or enclosing metal casks and other analogous purposes, the edges of the sawn pieces being at this first operation cut without waste to the requisite bevel for jointing together. The apparatus consists of a kind of compound sawbench, beneath the table surface of which are two horizontal spindles transversely disposed and capable of being adjusted to revolve at opposite inclines relatively. Fixed equidistant upon one spindle are three circular saws, and intermediately upon the other spindle two circular saws. The end of the board or plank is presented first to the three saws; these as it is pushed forward cut it into two parts, the middle saw dividing it up the center and the side saws respectively cutting the outer edge off each part. The plank is pushed forward and when it reaches the two saws on the other spindle, they divide each of the two parts up the center, so that four stave breadths are produced at one operation of the saws, each breadth having edges bevelled to incline in opposite directions. For presenting the wood to, and holding it firmly against the action of the saws, any of the well-known contrivances in use for the purpose may be resorted to.

The tapering of the ends of these staves as described in the Provisional Specification, is to be effected by a rotating cutter, the stave during the operation being laid upon a rocking table.

Rotary cutters are also to be used for hollowing the inner surface of staves.

[Printed, 8*d*. Drawing.]

A.D. 1862, October 29.—N° 2919.

FRYER, Daniel, and **MEEARS**, Joseph William.—(*Provisional protection only.*)—The object of this invention is to prevent the saturation or impregnation of the inside of casks or other receptacles by the liquors, spirits, or oils contained, so that such casks or vessels are maintained fit to contain other liquids without detriment thereto. This is effected by the use of a removable spirit or oil-proof lining, made in size and shape to correspond with and accommodate itself to the internal configuration of the cask or receptacle. This lining or bag is to be composed either of vulcanized india-rubber, waterproof canvass, or other suitable spirit or oil-proof fabric, material or compound. The bunghole is to be made in the head of a cask and of such size that the bag or lining may when folded and rolled up be passed through it to the inside, excepting the neck of the bag through and into which the liquor is poured, and when full and the neck of the bag has been closed by a ligature, screw cap, or other contrivance, it is to be placed within the cask, and the bunghole is to be closed by driving in a plug or bung. When emptied the lining may be drawn out, and the cask is then fit to be used for any other purpose. The linings when folded and packed together may be returned and used in fresh casks, thus avoiding the expense of returning empty casks to distant places.

[Printed, 4*d*. No Drawings.]

1863.

A.D. 1863, January 19.—N° 164.

LUNDY, John James.—This invention, relating to the construction of metallic casks, chiefly refers to the mode of fixing in the head or top end. Therefore (it is stated) the bottom end only has been swaged and made a fixture, the top end having been attached by circumferential straps or bent holding pieces with rivets. These holding pieces although they clasp the dished flanges of the head and prevent its moving upwards are not to be depended upon, and further, the ends of the handle have to be elongated and bent to clasp the edge or rim of the cask. To avoid these objectionable points, the inventor swages the head firmly in its place with a holding and tightening bead, in the same manner that the bottom is fixed in, which (it is stated) is much stronger. A modification consists in forming by means of swages an additional bead or shoulder inside the ends of casks for the heads or tops and bottoms to rest against. These beads projecting inside all round the ends, not only prevent the forcing in of the heads further than is required, but also they add strength to the construction.

[Printed, 8*d*. Drawing.]

A.D. 1863, March 6.—N° 644.

NEWTON, William Edward.—(*A communication from Samuel Jefferson Seely and Edmund Brown Bulkley.*)—This invention relating to the construction of metallic casks, consists in—

Making such casks of corrugated sheet iron, the corrugations running round circumferentially and so contrived, that when a number of these casks are ranged together, the corrugated ribs of one fit into the corrugated hollows of another, and vice versa, whereby the casks may not only be packed more closely, but are interlocked.

Fitting inside such casks a sheet metal lining, and making cask heads dished or concave externally, whereby they are rendered more capable of resisting internal pressure, the margin of the heads being bent outwards to form a flange all round. An annular external indentation near each end of the lining forms a shoulder upon which the heads when forced in respectively rest, and an internal bevelled hoop inside the flange forms a chime at each end and strengthens the general construction.

Strengthening the chimes of metallic casks by means of metallic hoops, which are shrunk on externally. Also hoops are used made of sheet metal doubled over, so that when driven or fitted on to the ends of a cask, one portion slides outside and the other inside, so as to clasp the flange of the head and the cask end together; they are then secured by rivets, which pass entirely through the different parts.

The bungholes of corrugated casks are supported, both internally and externally, by rings or cheeks which fit round the bunghole to the corrugated surface of the cask, and are secured by bolts or otherwise. The surface of the bung or plug when in its place is depressed sufficiently to avoid injury when the casks are rolled about.

The machine employed for corrugating the sheet metal operates by means of four grooved rollers, which are placed vertically and are capable of being lengthened to corrugate sheets of various breadths, suited to form different sized casks. The pressure is effected by means of levers of peculiar form and arrangement.

[Printed, 1*s*. 2*d*. Drawings.]

A.D. 1863, April 1.—Nº 844.

GAVIN, Robert. — (*Provisional protection only.*) — This invention relates to the preservation of perishable liquors, such as beer, wine, and spirits, in casks and vessels during the time they are being drawn off, so as to prevent deterioration by exposure to the atmosphere. To this end, the cask or vessel is to be made cylindrical, and furnished with a float of wood or other material, accurately fitted to float and slide up and down inside, in the manner of a piston. As the cask is filled the float rises upwards against the head, and resting upon the liquor, gradually sinks therewith as the latter is drawn off; by this means the atmosphere, which is necessarily from time to time admitted to give free vent, is confined between the head of the cask and the disc, and cannot come in contact with the liquid, which consequently preserves its freshness. The cask or containing vessel may be made either of wood, earthenware, metal, or other suitable material, the internal diameter in all cases being uniform. The edge or periphery of the floating disc may be grooved to receive an annular rolling packing of india-rubber, which is expected to preserve a perfect fit without much friction.

[Printed, 4d. No Drawings.]

A.D. 1863, June 4.—N° 1397.

NEWTON, William Edward. — (*A communication from John Connolly.*)—This invention relates to the construction of wooden casks, barrels, and kegs, which are fitted with metallic heads; it is also applicable to metallic casks, the chief feature consisting in the formation of the head, and the method resorted to for fixing it on. The body of the wooden cask is prepared, put together, and trussed in the usual way, and then the head, which is dished externally and flanged round, is secured on like a cap, so that the heads not only close the ends of a cask respectively but their flanges inclose the ends of the staves, and act as hoops all round. The inside of the flange is screw-threaded, and the heads may either be driven on or screwed on by means of a lever, which engages with two pins fixed projecting from the dished part of the heads. The screw inside the flange of the head cuts its way into the wood when applied to casks of that material, but when the body of the cask is made of metal the ends thereof are screw-threaded externally. The weakening of the chimes by cutting the cruze or groove to receive the heads is avoided, and at any time when the ends of the wood staves shrink, by screwing the head down an extra turn or so leakage is prevented.

[Printed, 8*d*. Drawings.]

A.D. 1863, June 11.—N° 1450.

HARRISON, Thomas Maddocks.—This invention, relating to the manufacture of metallic casks, refers more particularly to the method employed for connecting or fixing in the heads or top and bottom, which, instead of being secured to the body of the cask by hoops, and the junctions tinned or soldered, they are prepared and fixed in their places in the following manner:—The disc of sheet metal for a cask head is made considerably larger than the end of the cask, but by means of a press or other suitable contrivance, the broad margin is bent up all round to the exact size, so that it may be forced into the cask end. The turned up part is then bent outwards all round and then worked downwards outside, so that it will lap over the edge of the cask end and form a deep recess to receive it. When driven on the end of the cask, the junction of the parts is made air and water-tight all round by tinning or soldering in the usual way.

[Printed, 8*d*. Drawing.]

A.D. 1863, June 13.—N° 1485.

BENSON, John Solmons, and **JONES**, David.—The object of this invention relating to the construction of iron casks and vessels, is to fit to them heads air and water tight and removable at pleasure; it is also applicable to the closing of the man-holes of boilers and tanks. The inventors say, "The cask " or vessel that is to receive the head we fit with an iron hoop " L-shaped in cross section, rivetting or otherwise securing " the same within and at the end of the cask. This hoop is " pierced at suitable intervals to receive screws, by which the " lid or cover forming the removable portion of the head is " held in position. On the under side of the iron hoop, and " immediately below the holes therein, water-tight boxes are " secured, the same being tapped to receive the before-men- " tioned screws. The lid or cover consists of a metal disc, in " which are formed two annular concentric corrugations, the " outer one forming a lip to the cover, and thereby strengthen- " ing it, while the inner corrugation is intended to receive a " ring of india-rubber packing. The vertical lip or flange at " the inner edge of the iron hoop presses upon this india- " rubber ring when the cover is applied, and thus by the aid " of the screws, a secure air and water-tight joint is obtained."

[Printed, 8*d*. Drawing.]

A.D. 1863, June 29.—N° 1878.

THOMPSON, Nathan.—This invention relates to the construction of apparatus for stopping the bungholes of casks and similar vessels, and to the appliances used in connection therewith. The bunghole of a cask is made larger for a portion of its depth outside to receive a bush, which is screw-threaded externally so that when screwed into the bunghole, it is held in its place by the screw threads which sink into the wood; a square round the lower end of the bush inside forms a seating for a valve, that is forced down by the central screw of a cap, resistance being obtained from a number of projecting ears, which slide down vertical grooves in the bush, and when the latter is turned slide circumferentially into an annular groove, into which the vertical grooves severally lead. By this means the cap is made fast and capable of resisting the screw when the valve is screwed down upon its annular seating. By relaxing the screw when drawing off the liquor, the valve may be slightly lifted, thereby avoiding the use of a vent peg. The appliances named are for the purpose of turning the cap and the central screw, and lifting the cap and valve out of the bush when required.

[Printed, 8*d*. Drawing.]

A.D. 1863, September 23.—N° 2347.

COLLINGRIDGE, Augustus.—The object of this invention relating to a mode of lining casks with various substances, is to prevent leakage and so preserve the interior from saturation, that the liquid contents cannot penetrate the wood; it will (it is stated) also render foul casks capable of being used without the risk of damaging the liquor with which they are filled. These results are effected by lining casks with gutta-percha and other vegetable gum, malleable glass, sheet iron or steel, aluminium, lead, tin, copper, and its alloys, shellac, white and other wax. Wood veneers rendered impervious by saturation or immersion in hydrocarbon water proof solutions, used either alone or mixed with one or more of the above substances, are also used to line casks. The gutta-percha and similar substances may be applied in either thin sheets, in a plaster state or dissolved, and in some cases it is hardened by oxide of iron or other well-known means to render it tough and more durable. "Old staves spoilt by the action of deleterious or "penetrating liquids or agents, usually termed by the trade "'stinkers,' can be rendered serviceable by means of any of "the foregoing applications, sheathings, or facings, and the "heads of the casks being similary treated as the staves, the "whole are to be set up, put together, and hooped round by "the cooper. The bung and bunghole may also, if advisable, "be treated in a similar manner to the cask, so as to perfect "the hermetical closing of the cask."

[Printed, 4*d*. No Drawings.]

A.D. 1863, October 12.—N° 2498.

BROWNING, Thomas.—This invention relates to the construction of metallic casks, which are made in two transverse parts or halves, connected together by means of an internal dowel hoop or ring, which is slid into the open ends of the two parts and forms a mid-length junction, one half portion of the hoop entering into the mid-end of each part respectively; on the outside are driven two hoops, which bind the ends to the internal dowel hoop, the junction to prevent leakage being afterwards soldered.

The central junction or connection of the half parts of a cask may be made by sliding the end of one part into the end of the other part, which by means of rollers may be worked into a kind of socket whereinto the plain end of the one part is slid; a packing may be used inside the socket and a binding hoop may be placed outside, soldering being, as usual, resorted to to fill up the crevices. The sheet metal of which these casks are made is corrugated between the mid-length junction and the two ends either to run circumferentially or longitudinally, and the heads are adjusted in their places from the inside before the two half parts are united. Several other modes of connecting the mid-length junction of metallic casks made in two half parts are described.

Describes the apparatus employed for cutting the sheet metal; this operates by means of a revolving cutter traversing along a straight knife. Also an apparatus contrived for bending over the edges of the sheet which lap or seam together. The corrugating of the metallic sheets is performed by grooved or fluted rollers mounted in suitable side frames.

The painting of the inside of a metallic cask is done before the two half parts are connected, and both the inside and the outside are painted by brushes which move mechanically.

[Printed, 1*s.* 4*d.* Drawings.]

A.D. 1863, October 22.—N° 2604.

NOAKES, Benjamin, and WOOD, Frederic John. —The object of this invention, relating to the construction of metallic taper casks or bottles, is to dispense with the system of hand soldering and effect the union of the shoulder of the taper top with the body by mechanical means. The flange of the shoulder is raised by stamping with a die, and the shoulder of the taper tap is corrugated to the body by means of a machine, *in which is mounted* horizontally, one above the other, two roller spindles. At one side of the machine these spindles project, and carry at their extreme end two short rollers or collars, which are grooved circumferentially, so that a projecting ridge formed between two grooves in the top roller fits into a central groove in the roller beneath. The body of the cask is so placed on one of the projecting spindles as to bring that portion of the flange which laps to the taper top of the cask between the rollers, which are then, by means of a screw acting on the spindle bearing, set the required distance apart, and as the rollers rotate, the two parts are corrugated together all round. After this part of the process the union of the parts is made perfect by dipping the corrugated junction in a bath of solder. Any other part of the body of a cask may be strengthened by the operation of this corrugating apparatus.

The top die or plunger of the stamping machine is suitably bevelled to produce the flange and fit into a bottom die of corresponding form, hooks or other contrivance being provided for firmly holding the article whilst being operated upon.

Describes what is called a "folding machine," which turns the edges of the metal to form the grooved seam running between the neck and shoulder of the taper top.

[Printed, 8*d*. Drawing.]

A.D. 1863, November 19.—N° 2905.

COLYER, JOSEPH.—This is an invention of an appliance for stopping casks and vessels, and designed as a substitute for the ordinary detached bung. It (as described by the inventor) consists of a "stopping piece, which slides or travels in, under, " or behind a frame fixed to the cask, vat, or vessel, so that " the stopping piece is thereby prevented from falling from the " cask or vessel, but is free to slide to the orifice to close it, " and from the orifice to open it. To steady the stopping " piece, it travels in a groove, recess, or way formed in or by " the frame. When the stopping piece is at the orifice it is " tightened in, to, or against the frame by any suitable means, " one mode being by a stay or bar extending across the " stopping piece, and raised and pressed by a screw or nut " against the sides of the frame or against shoulders or " bearing surfaces thereon, or the stopper may be tightened

" by means of a wedge or by screws working between the
" stopping piece and the frame, or it may be tightened other-
" wise. The stopping piece or a part thereof enters to the
" required depth into the orifice to plug it. The stopping
" piece may be combined with a spring to keep it tight under
" various pressures. An orifice may be formed in the stopping
" piece as a vent hole, such orifice being closed by a nut or
" screw cap which can be removed, and a pipe provided with
" a stop-cock fitted to the vent hole."

[Printed, 10*d*. Drawings.]

A.D. 1863, November 19.—N° 2911.

HODSON, William Benjamin.—This invention relates to the construction of sheet-iron cans or drums adapted for holding oils. According to the statement of the inventor, the tin usually employed for coating the sheet iron on one side, for the purpose of soldering the joints and parts together, is found to be impure and prejudicial to the oils and fluids which such vessels are to contain, and to avoid this, only those parts which lap and are to be soldered together are coated with tin, none of that metal being exposed to the oils and other fluid contents. Thus only those parts which lap and form the longitudinal seam of the cylindrical body of the vessel and also its extreme ends are tinned, as well as the flanges which are raised on the ends. The tinning is effected by dipping the margins of the parts to the depth of about ½ an inch in the melted metal, pickling being previously resorted to, the handle and the mouth or neck being fixed before the parts are tinned. Large and small drums or casks are made in the same manner, the main object in all cases being to confine the tin to the joints, and prevent any appearance of it on the internal surface of the cask or vessel.

The furnaces employed in the tinning process are specially arranged to heat only those jointing parts which it is necessary to tin, and for this purpose the furnace is covered with a cast-iron or other metal top, wherein are slits and openings through which the heat passes and reaches only those limited portions or margins which require to be tinned; the plate acting as a shield prevents the heating of the other parts.

[Printed, 8d. Drawing.]

A.D. 1863, November 21.—N° 2933.

COPE, David.—(*Provisional protection only.*)—This invention, relating to the manufacture of metallic casks, refers to that part of the process which consists in dipping the ends in the soldering metal which is employed to fill the chinks and crevices of the joints, during and after which process the cask is caused to rotate. It is applicable to the metallic casks made according to the Specification of former Letters Patent granted to this inventor, and dated October 8, 1860, No. 2429, and consists in placing the cask or vessel, when the ends are fitted in and the chimes made ready, upright upon a plate somewhat smaller than the heads or ends, so that the chime overhangs the periphery of the plate all round. This plate is disposed horizontally in the vessel which contains the melted metal, and rotates upon an upright central pivot or stem. The chime only of the cask is immersed in the metal, and during the process the cask and plate are caused to revolve, whilst the molten metal enters and fills the interstices between the surfaces respectively of the parts which are to be united; this being effected, the cask is removed from the bath and placed upon another plate, which is also caused to revolve; the excess of soldering metal is thereby thrown off centrifugally, and the same force prevents the draining of the metal downwards out of the joint before it has time to cool. A pad of fibrous or other material, applied either by hand or otherwise to the soldered parts whilst in motion, smooths and cleans off the work.

[Printed, 4*d*. No Drawings.]

A.D. 1863, December 15.—N° 3166.

DAVIDSON, James.—This invention relates to the construction of sawing apparatus adapted to cutting cask staves, and to a lathe and appliances for chiming or turning and grooving the ends of casks or barrels. The apparatus for cutting staves operates by means of a band saw suitably mounted and driven, and in order that a uniformity of shape may be insured to any number of staves for any given size or kind of cask, the inventor says:—"I provide a novel construction of compound template, which carries the wood to be cut and presents it to the action of the saw in such manner as to enable

" the saw to follow the desired line of cut, the position of the " wood being always so maintained that the saw band or blade " without torsion shall freely follow the proper direction for " the cut. By this means, therefore, I am enabled not only " to ensure a clean cut and remove the risk of twisting and " breaking the saw, but, without marking on the wood the " desired course for the saw cut, or requiring any skill or " aptitude for irregular sawing on the part of the attendant, to " effect the expeditious cutting of staves." This "template" may also be used for the same purpose in combination with reciprocating saws.

The chiming and grooving of the ends of casks or barrels is effected in a lathe furnished with apparatus for operating on both ends of the cask body simultaneously. The cask being trussed with metal hoops is held in the lathe by two expanding chucks, carried by two headstocks, one of the latter being adjustable. The cutting tools are carried by two slide rests, one at each end of the lathe, and each slide rest carries two tools, respectively for chiming and grooving; the holders which carry the tools are adjustable, so that the tools may be set to operate at any desired angle.

[Printed, 1*s*. 4*d*. Drawings.]

1864.

A.D. 1864, January 23.—N° 191.

McELROY, JOHN.—(*Provisional protection only.*)—This invention relates to the manufacture of stands for casks and barrels which, when mounted thereon, may be placed either in a horizontal position or inclining to any desired angle. "That " portion of the stand on which the cask or barrel immediately " rests is supported by an axle which passes through bearings " in an upright frame. Two bars are attached to the frame, " one at the back, and the other at the front thereof; a bolt " with a worm or thread formed thereon being passed through " the said bars and secured by collars at either end thereof. " The said bolt is provided with a handle, by means of which " the same may be turned round. On the thread of the bolt "a nut is fitted, a bar of wood, iron, or other suitable material "being secured thereto by a hinge. The other end of the "last-mentioned bar is secured by another hinge to a con-"venient part of that portion of the stand on which the cask "or barrel rests, and which moves along with it. On the "handle being turned the nut traverses from one end of the "screw to the other, carrying with it the end of the bar to "which it is attached, and on the motion of the handle being "reversed, the nut will then move in the contrary direction. "If in the former case the bar was inclined or nearly hori-"zontal, it will be brought, by turning the handle, to a "perpendicular position, or as near thereto as may be "required, thus raising the cask or barrel in a corresponding "degree; while by reversing the motion of the handle the "cask or barrel will be brought again to its original position."

[Printed, *4d.* No Drawings.]

A.D. 1864, January 29.—N° 249.

BROMWICH, Bryan I'Anson.—This invention relates to the construction of casks and vessels adapted for storing and preserving wines, spirits, and liquors whilst in process of being drawn off, the object being to prevent the exposure of the surface of the liquor to the atmosphere, which is necessarily admitted to the interior of the cask as the quantity of liquor diminishes. The casks employed are cylindrical, of uniform diameter, and stand on end; the head or lid (as described by the inventor) "instead of being fixed is fitted within the top "of the vessel, and is protected from coming out by a flange "or collar round the internal periphery of the top of the "vessel; the edge of this loose head or lid is grooved or sunk "to receive a packing, which may consist of a steel annular "spring and an annular packing of india-rubber tubing, gutta "percha, or hempen or other suitable packing, thus the loose "head is always fitting closely the inside of the vessel, whilst "it is capable of falling and keeping close down upon the "contents by the pressure of the atmosphere, and this pres-"sure may be assisted by weighting the head if requisite. At "the bottom of the inside of the vessel I provide a distance "flange, so that when the contents are nearly exhausted the "loose head rests upon this flange. The orifice for the inser-

" tion of the tap is placed close to the bottom of the cask, and " I provide against dregs or refuse entering the tap by placing " a perforated casing behind the orifice for the tap; this " casing acts as a strainer. Thus as the contents are with- " drawn through the tap, and the bulk reduced, the remainder " is kept perfectly air-tight and free from evaporation by the " loose head descending as the fluid falls by the pressure of " the atmosphere on its outer surface."

[Printed, 8*d*. Drawing.]

A.D. 1864, March 4.—N° 551.

BOURNE, Stephen.—The object of this invention relating to the construction of casks and vessels for containing beer and other liquids liable to deterioration, is by the use of a loose flexible diaphragm to effect the drawing of their contents partially or wholly off, and also the filling of the cask, without exposing the liquid to the atmosphere. The size and configuration of the diaphragm corresponds with the outside profile of the cask, and one of the modes proposed for fixing it is to place its margin between the joints of the staves at the opposite sides of the cask, and between the joints in the head pieces in the ends, the latter joints being arranged to coincide with the line of the joints of the staves; and when the hoops are driven on, the margin on all sides of the diaphragm will be firmly gripped between the joints respectively of the staves at the sides and of the head pieces at the ends. The central portion of the diaphragm hangs loosely, and being capable of extension it will accommodate itself to the internal form of each half of the cask, either to the upper half when the cask is filled, or to the lower half as the cask is emptied. The atmosphere is admitted above the diaphragm, and the liquor through the tap hole below it, so that they never come in contact; the diaphragm floating on the surface as the liquor sinks is depressed and extended by the weight of the atmospheric pressure, which may be freely admitted above it.

[Printed, 4*d*. No Drawings.]

A.D. 1864, May 10.—N° 1188.

JONES, David, and BROMWICH, Bryan I'Anson.—(*Provisional protection only.*).

This invention relates to the construction of casks and vessels adapted to hold beer, wines, spirits, and liquors; also to appliances for facilitating the drawing of them off.

1st. As adapted to a beer cask for keeping the liquor fresh and effect the drawing off without admitting the atmosphere, it consists, by means of a pipe, in putting the upper internal part of the cask into communication with a closed reservoir containing carbonic acid gas under pressure. The gas enters the cask and forces the liquor out of the tap when the latter is opened, and in the case of beer and similar beverages it keeps them fresh to the last.

2nd. "Applying to casks and other vessels a moveable head, " to which is attached a screw working through the ordinary " fixed head, somewhat similar to a screw press, and this " moveable head is to be screwed down as the contents are " drawn off; or the vacuum caused by the withdrawal of the " contents may be filled by inserting into the cask or vessel " an air-tight bag or bladder with a tube or neck passing " through the head of the cask and furnished with a mouthpiece and stop-cock; this bag may be inflated by the mouth " as the fluid is drawn off, and the vacuum being thus filled " by the distended bag the remaining contents are kept air-" tight."

[Printed, 4*d*. No Drawings.]

A.D. 1864, May 26.—N° 1310.

BROWN, John Harcourt.—This invention relates to a mode of treating the skins or hides of animals chemically with a view to produce a kind of fibrous substance which, when mixed with vegetable fibre and other matters, is capable of being formed, rolled, or moulded into a variety of shapes, including thin sheets for use as a substitute for parchment or vellum, imitation leather, book bindings, and case coverings, slabs or blocks for backing armour plates, covering floors, and similar purposes, machine and carding bands, and casks and hollow vessels adapted for the safe holding of gunpowder, are also moulded from the combined mass in a plastic state. With regard to casks and vessels the inventor says :—" In the con-" struction of non-inflammable safety casks, cylinders, cases, " flasks, and such like hollow articles for containing gun-

"powder, or other combustible matters, I prefer to employ the "plastic animal fibre mixed with woollen or other fibrous "waste, and pressed by dies into the required form, employing "the adhesive materials best suited for the purpose of "uniting the parts, or they may be made in sundry parts by "dies and pressure, and put together by bands, hoops, and "similar means."

[Printed, *6d.* No Drawings.]

A.D. 1864, August 6.—N° 1955.

TAYLOR, WILLIAM ROWLAND.—This invention, relating to casks for containing wine, spirits, beer, and other liquors, has for its chief object "the keeping of casks air-tight, and thereby "preserving them sweet and preventing the formation of "fungus." To this end it refers :—

1st. To fitting distinct peg-holes into casks, either of metal screwed into the stave, or of wood, the object being to prevent the weakening of the cask by frequently boring fresh holes.

2nd. Relates to the making of different forms of hole, and to placing a distinguishing mark on the cask to indicate its position.

3rd. Employing internal valves to cover and close the vent peg and tap holes in casks. These valves are attached to springs, which yield when the tap or vent peg is introduced, but react and close the holes at the moment of their withdrawal.

4th. Relates to a metal shive hole with which a metal peg hole is combined.

5th. Shives or bungs in which a peg hole of either metal or wood is formed to receive a cork or peg that may be pushed in by the pressure of the ordinary vent peg, which will then fill the hole.

6th. To prevent fraud. Covering the shive or bung containing the vent hole with a canvas or paper label, so that the peg or cork in the vent hole cannot be reached without damage to the label.

7th. An instrument (to be introduced through the bunghole) for inserting pegs into peg holes from the inside of casks.

8th. An instrument for withdrawing shives or bungs, consists of a screw with a head and a bent lever, the short forked end whereof operates beneath the head of the screw when it is screwed into the bung, and raises or draws the latter when the longest end of the lever is pressed down.

[Printed, 8*d*. Drawing.]

A.D. 1864, September 9.—N° 2198.

GRAFTON, Henry.—(*Provisional protection only.*)

This invention, relating to a mode of cutting wood, and to the machinery employed, is adapted to the cutting of staves, laths, mouldings, and other definite forms; the operation is (it is stated) performed without waste, and in such a way "as " to give a concave and convex piece out of each other." It is also applicable to the cutting of plane surfaces, and consists of " a mounted table with driving gear, having upon and beneath " its surface diagonal frames into which are set a series of " sectional cutters shaped upon the side to a section of the " wood to be cut, while the cutting edges are formed at an " angle to receive the wood, which is pressed forward by two " pitched chains, having a relieving and pressing bar running " across them, or any other suitable motion; each sectional " cutter is mounted in a separate chuck or division, having " screw and other adjustments for giving the proper depth " and breadth of the cuts; the angle of the frames in which " the chucks are placed can be varied; below the table is a " counterpart of that which is above; beyond these arrange- " ments, but in the centre of the same plane, is another set, " which I call bridged cutters, representing the entire and " unbroken section of the wood to be cut, having also standing " out therefrom a concave edged cutter. Where the wood " enters to receive its first cut, guides are provided for keeping " it in position and under restraint, while a third division of " cutters are here placed for removing such portions of the " wood not required, and for the purpose of admitting the " arms of the sectional cutters to facilitate the operation. " Another plan consists of a hand frame, in which is placed " one or two cutters, having screw or other adjustments for " making single longitudinal curved cuts, which traverses " along the wood, and by its means cuts a lath or moulding.

[Printed, 4*d*. No Drawings.]

A.D. 1864, October 3.—Nº 2430.

COWLES, Walter Smith.—(*A communication from Louis Spicer Robbins.*)—This invention, relating to a special mode of treating manufactured casks and similar vessels intended to contain petroleum, naptha, and such like fluids, consists in saturating the surface of the cask externally and internally with two different substances, one being of an unctuous nature is first applied to the outside, and the other, which is applied to saturate the inside, is an alkaline solution that will resist the action of petroleum or other liquid contents of a similar nature. The inventor says, "I have experimented with suc-
" cess on casks, barrels, kegs, etc. made of different kinds of
" wood of various sizes and thicknesses, the same being some-
" times quite damp and sometimes very dry before subjecting
" them to my treatment. I have also tested a variety of
" alkalies and alkaline solutions for the inside, and I believe
" that my invention will apply, with reasonable care, under
" all ordinary circumstances and conditions."

The material employed for saturating the surface of the cask externally is linseed oil in a heated state, in a bath of which at 200° Fah., the cask (being first carefully closed) is placed and turned over for a short time, until the surface of the wood is saturated.

The substance to be applied to the interior is a solution of potash first heated to about the same temperature in a kettle, whence it is poured into the cask through the bunghole. The solution (if the cask be filled) will penetrate rapidly, and in a short time it will saturate the wood, but if only a small quantity be used the solution will become cold, and one or two hours will be required to make the operation effectual. The alkaline solution obtained from other substances may be employed, and for the exterior, with a view to economy or convenience, the fixed oils, oil and resin, oil and litharge, crude petroleum, coal tar, or other products, alone or combined, may be employed.

[Printed, 4*d.* No Drawings.]

A.D. 1864, October 20.—Nº 2599.

HALL, Walter.—(*Provisional protection only.*)—This invention relating to the construction of barrels and casks intended to contain gunpowder, is briefly stated by the inventor to consist "in lining barrels for containing gunpowder with " india-rubber or india-rubber cloth or felt, or in interposing " such material between an inner and an outer barrel or cask, " the inner barrel being also lined with such material."

[Printed, 4*d*. No Drawings.]

A.D. 1864, November 21.—N° 2905.

BOURNE, Stephen.—This invention relates to the construction of self-acting vent pegs and valves adapted for regulating the passage of air or gas to and from casks containing beer and such like liquors. These valves, of which several examples differently arranged are shown and described, are generally but not necessarily fitted in the bunghole of the cask, and consist of a vulcanized india-rubber diaphragm, fixed across so as in some cases to completely divide the valve box, whence there are two small central openings, one below the diaphragm communicating with the interior of the cask, and one above it leading to the atmosphere. The diaphragm is perforated with fine holes punctured through it with a needle, which holes close when the needle is withdrawn, but when the effect of any undue pressure either from the inside of the cask or externally is exerted upon the diaphragm the latter becomes distended; the punctured holes then open, and the excess of pressure is reduced by the escape of the gas, or the passage into the cask of air, as the case may be. In one example the diaphragm is supported underneath, so that it can only yield to internal pressure.

Vent pegs are constructed to act upon the same principle, either simply to admit air as the liquor is drawn off, or to regulate the pressure in both directions. The tapering wooden peg is made tubular with a small open passage through it from end to end, and the perforated vulcanised rubber is, in the form of a cap, drawn on the smallest end of the peg which passes through the vent hole.

[Printed, 10*d*. Drawing.]

A.D. 1864, December 1.—N° 3002.

SMITH, Charles, and FLETCHER, William.—(*Provisional protection only.*)—This invention relates to the use of ash wood for the manufacture of casks, instead of oak, which (it is stated) is not only more expensive, but is liable to impart objectionable flavor and colour to liquids placed in them unless such casks are passed through tedious processes of seasoning. On the contrary, ash gives out no colour or flavor, is cheaper in the first instance, and by reason of its tough nature, is not so liable to be damaged by rough usage. The inventors say, "In " preparing the ash for the manufacturer into casks we find it " desirable to saw the wood into lengths proportionate to the " sizes of staves desired, and divide such lengths into quarters, " finally cutting the staves from each quarter; by this means " we obviate leakage in the cask, as the surface presented will " be smooth and free from pores. Casks made according to " our invention may be used immediately after their manu- " facture, whilst the ordinary casks require invariably a " further seasoning before being put into use."

[Printed, 4*d*. No Drawings.]

A.D. 1864, December 3.—N° 3017.

ULRICH, JOHN GOTTLIEB.—(*Provisional protection only.*)—This invention relates to means and contrivances to be employed in the packing, conveying, and storing gunpowder and other explosive substances with a view to prevent explosions.

1st. To prevent the ends of the staves of gunpowder casks breaking off, to which (it is stated) they are liable and cause leakage, the chimes at both ends are left thicker and therefore stronger, and are not chamfered off as is usual to a sharp angular edge. Also the margin round each of the heads or ends is not bevelled on both sides in the usual way, but is left comparatively square, the grooves into which the heads respectively fit at the ends of the staves being made of corresponding shape. In place of removing the hoops and taking out the head of a gunpowder cask to obtain access to the contents, thereby involving much risk, the inventor says, "I apply a " bung or stopper to a hole formed either in the head or one " of the staves. The bung or stopper is formed, by preference " with a broad flanch, over which a ring or disc of india-rubber " (by preference vulcanized) or other suitable elastic material is " placed so as to close and hermetically seal the hole in the " cask when the stopper is pressed down and secured by

" screws, turn buttons, or other fastenings employed to secure
" the stopper in or over the hole."

2nd. Relates to the construction of corrugated or cellular gangways or surfaces for the conveyance of gunpowder and explosive substances in gunpowder mills, barges or vessels, warehouses, &c.

3rd. Relates to the construction and mode of closing the doors and shutters of warehouses, magazines, and places containing gunpowder or explosive substances. These doors and shutters are made of great strength and comparatively small, and are well fitted in their frames and openings, which are packed all round with india-rubber or other elastic material, so as to prevent either ingress or egress of air. Danger of explosions liable to be caused by lightening in powder magazines and places is avoided by storing the casks containing the powder on cushions or bags containing feathers, quilts or coverings coated externally with feathers being used to cover them.

[Printed, 4*d*. No Drawings.]

1865.

A.D. 1865, February 6.—N° 327.

DUNCAN, George.—(*Provisional protection only.*)—This invention, relating to the construction of metallic casks and drums, refers also to machinery or apparatus designed for embossing and forming on their ends expeditiously and cheaply concentric rings or grooves and other devices, and for turning over the edges so that they properly fit into the body of the cask, the ends of such casks being strengthened by the process and rendered less liable to bend. The inventor says,
" I attach on to the outer end of a hydraulic ram fitted in
" framework of the usual kind a stamp or die, and connect a
" pipe from a hydraulic pump to the ram, so that by water
" pressure the ram and stamp or die may be made to travel
" forwards and backwards. Opposite the said stamp or die
" there is a *corresponding* one kept stationary by strong frame-

" work. By placing a sheet or several sheets of metal between
" the dies and moving the hydraulic ram and the die thereto
" attached, the sheets are formed in accordance with the
" designs on the dies in the matrix between them."

[Printed, 4*d*. No Drawings.]

A.D. 1865, February 16.—N° 446.

STAUNTON, Charles Octavius.—This in an invention of a cask-stand with tilting apparatus. The stand comprises a rectangular frame mounted on four short legs, one at each corner. Across the stand, so as to obtain a bearing for its ends in holes made through the side rails, is mounted a shaft, whereon are eccentrically fastened two discs such a distance apart as to afford two resting points for the back end of the cask, one at each side, its front end resting upon the front rail of the frame. When the cask is full it rests in a level position upon the periphery of the excentrics in a line with their shortest radii, which is then uppermost, and when the cask requires tilting the shaft is from time to time turned a portion of half a revolution, so as gradually to bring the full sides or longest radii of the eccentrics above the shaft, and thereby raise the back end of the cask by degrees sufficiently high to permit of all the liquor running off. The shaft, whilst the cask is being tilted, is held in position by a pawl which engages with a ratchet wheel fixed on one end of the shaft, the pawl being pin-jointed to the frame.

[Printed, 10*d*. Drawing.]

A.D. 1865, February 28.—N° 564.

FORDRED, John.—This invention relates primarily to the purification of hydro-carbon oils, and incidentally to the casks employed for storing and transport. These oils are distilled at low temperatures from coal, shale, and peat, which it is usual in the preliminary process to treat with sulphuric acid, but instead thereof, the inventor employs in the preliminary process a caustic alkali, whereby (it is stated) a large proportion of the colouring and other matters are separated, which not only facilitates the ordinary after process and lessens the proportions of acid and alkali, but it improves the quality of the products obtained.

As regards the casks employed for storing these oils, in lieu of, as is usual, applying to them internally a solution of glue which forms a kind of lining, they are internally smeared or coated over with a heated solution of glue and treacle combined, and of such consistence as when cold will be found adhesive and elastic.

[Printed, 4*d*. No Drawings.]

A.D. 1865, March 21.—N° 781.

PENNYCOOK, Charles Hill. — (*Provisional protection only.*)—This invention, relating to the construction with sheet metal of gasometers, tanks, casks, and similar vessels, consists in connecting the metallic sheets by means of narrow intervening seam strips, instead of lapping the joints in the ordinary manner and rivetting through. These seam strips have a rabbet or groove sunk in each edge to receive the edges of the plates they connect. Lapping pieces are rivetted to the adjacent corners where they meet, to bind the sheets together and keep them in position, and the grooves and joints are "made tight by paint, cement, or solder."

Tanks for gasometers and other purposes are put together on the same principle of construction.

Casks and similar vessels of smaller size are (it is stated) rapidly and economically pnt together in the same manner. "In some cases a single sheet will serve for the cylindrical "part, and its two meeting edges will be entered into the "grooves of a longitudinal seam strip, whilst its end edges "will be entered into grooved rings."

[Printed, 4*d*. No Drawings.]

A.D. 1865, March 24.—N° 834.

BROWN, John Bailey.—(*Provisional protection only.*)—This invention relates to the construction of casks and vessels adapted for storing petroleum and hydrocarbons, and for which purpose such casks are made to consist of an internal cylindrical cask of lead within an external covering cask of wood. The ends of the cylinder or vessel of lead are closed with heads or ends of the same metal soldered in or otherwise fixed, one end being furnished with a tubular opening which is closed by a *screw plug* or cap. This vessel is placed within a cask of wood having a slight bilge externally, and by this means (it is stated) "a very strong and useful cask or vessel for "storing petroleum and hydrocarbons is constructed, such a "cask or vessel will prevent the leakage of vapour, now a "source of great loss, and will also prevent the dangerous "effects of the escape of vapour when in the neighbourhood "of fire. The casks or vessels thus constructed will at all "times retain much of their original value."

[Printed, 4*d*. No Drawings.]

A.D. 1865, March 31.—N° 913.

NEWTON, Alfred Vincent. — (*A communication from Lewis Francis and Cyrus Loutrel.*)—This invention relates to a composition to be applied to the interior of barrels, to packages, and fabrics, for rendering them impervious to air and gases. The composition is produced by combining in about the following proportions, 50 lbs. of glue, with 100 lbs. of glycerine and 25 lbs. of sugar. The glue after being soaked in water for about 10 minutes, is, when the water is drawn off, in order that it may readily incorporate with the glycerine, allowed to stand for about four hours. It is then placed in a steam or glue kettle, and when heated, the glycerine and sugar are added thereto. The whole is then heated to about 200° Fah., and after having been kept at that temperature for about 40 minutes, it is fit for coating porous substances. For lining petroleum casks or barrels the composition in a hot melted state is when poured into them, through the bunghole which is afterwards closed, made to attach itself to all parts of the interior of the barrel by turning the latter over and rolling it about, ; four gallons or thereabout of the composition being required to line a 40 gallon cask, the interior of which must be free from moisture, in order that the composition, which when cold forms a flexible lining, may adhere to all parts. Old barrels before they are lined with the composition require to be cleaned with benzine or alkaline solution, and well dried. By the use of this composition as a lining, barrels rendered imperfect either by flaws in the wood or otherwise may (it is stated) be made fit for use. Other substances may be used in *lieu* of or in addition to those above named.

[Printed, 4d. No Drawings.]

A.D. 1865, April 15.—Nº 1068.

CLARK, William. — (*A communication from Henry Loewenberg and Emile Granier.*)—This invention relates to the manufacture of an elastic compound substance, which may be (as a substitute for india-rubber) used for a variety of purposes, including the lining of barrels intended to contain petroleum. The materials, which when combined in the following proportions form a tough elastic mass not liable to crack or scale off, consist of glue or gelatinous substances, 4 lbs.; nutgall, or gallic or tannic substances, 3 ounces; glycerine, or oils or their equivalents, 8 ounces; and acid, either acetic, pyroligneous, or other similar, 1 lb. To the acid, which is diluted with water, the glue is first added, and afterwards, when the latter is dissolved, the other ingredients. The above proportions may be modified and other ingredient substituted. The compound is capable of resisting the penetration of liquids such as benzine, turpentine, oils, fatty, volatile and other liquids. It may (it is stated) be produced at a small expense, and its application to petroleum barrels alone will cause a large saving of that portion of the oil which is now lost by leakage.

Under this patent the inventor also claims "the use of " resinous or balsamic substances (as copal, pitch, tar, or their " equivalents) with sulphur or its vapor, and the application " of heat in combination with gluish or gelatinous substances, " either with or without other ingredients, for the purpose of " vulcanizing or solidifying such gluish or gelatinous substances " or compositions in order to impart to them qualities similar " to vulcanized india-rubber."

[Printed, 4*d*. No Drawings.]

A.D. 1865, May 13.—Nº 1329.

PARKINSON, Thomas, and SNODGRASS, William.—This invention relates to the construction of stillages or stands (self-acting or otherwise) for casks and barrels which, when placed thereon, may be gradually tilted to an inclined position, necessary when the liquor has sunk to about the level of the tap hole, for drawing or causing it to run out of the bilge. The inventors say, "We prefer to make the stand of cast iron, " formed by one vertical frame and a horizontal projection

" therefrom; this vertical frame carrying the pivots of a beam " lever frame constructed to receive the barrel, cask, or other " vessel, which is partly balanced thereon, the heavy end of " the lever frame being supported by a spring or springs, or " by a weight or weights acting directly or through levers and " inclines upon the lever frame, so that when the liquid in " the cask or other vessel placed on the said lever frame has " been drawn off sufficiently, the spring or springs, weight or " weights, will (as the weight diminishes) act upon and gradu- " ally elevate one end, and consequently depress the other " end of the lever frame. A latch is jointed to the vertical or " horizontal frame, which is arranged to hold down the lever " frame while the vessel is being placed upon it, and it is " also used to prevent the lever frame from being forced down " by accident, so as to agitate the liquid contained in the " vessel. A screw may be substituted in place of the weights " or springs, retaining the other parts of our improved combi- " nation, which screw may be made of brass, the screw being " connected to a lever or levers attached to the lever frame " and to the framing, so that by turning the screw by hand " the lever frame may be gradually elevated at one end as " required."

[Printed, 10*d*. Drawing.]

A.D. 1865, July 4.—N° 1764.

CLAPPERTON, William, and LYLE, Abram.—This invention relates to the construction of an apparatus by the use of which (it is stated) the staves of casks and barrels may be speedily, economically, and efficiently set up and trussed. The partly formed cask having the staves in position, their bottom ends being circumposed together and their top ends standing apart, is placed upon a table beneath the apparatus, which consists "of a square frame hinged at one side to a wall or " other support, so that it can be tilted up for entering or " removing the cask, the outer side having attached to it a " chain passing over a pulley to a counterweight. Within " the frame are four segments, which are forked to fit into " each other, and each segment is set on the inner end of a " *screw spindle*, carried one in each of the four sides of the " *frame*. The part of the frame at which each screw spindle

“ crosses is slotted to receive a worm wheel, the eye of which
“ is screwed internally to work on the spindle. With each
“ worm wheel there gears a worm on a shaft parallel with the
“ side of the frame, and the four worm shafts are connected
“ by bevil wheels so as to work together, whilst the one at
“ the hinge side of the frame has upon it fast and loose pulleys
“ to be driven by a belt from an overhead shaft. Before
“ entering the partly formed cask the gearing is set in motion
“ to screw the segments sufficiently far out to permit of the
“ top ends of the staves being got within them. The cask
“ being entered, the frame is turned down into the horizontal
“ position, and the gearing is set in motion to screw the
“ segments towards the centre. The segments in collapsing
“ in this way act equally all round upon the staves and ‘set
“ ‘them up’ in a superior and rapid manner. A hoop is
“ placed on the ends of the staves, which project above the
“ segments sufficiently for that purpose, the segments are
“ then screwed outwards, and the frame being lifted up the
“ cask is removed. If preferred, the apparatus may be pro-
“ vided with more than four segments with their actuating
“ gear.”

[Printed, 8*d*. Drawing.]

A.D. 1865, July 28.—Nº 1957.

NEWTON, William Edward.—(*A communication from Edward Delavan Woodruff.*)—This invention relates to a certain mode of applying air and waterproof solutions to the inside of casks and barrels, with a view to render them internally impervious to air and water or fluids, and thereby prevent leakage and evaporation, the system being (it is stated) particularly applicable to barrels and casks intended to contain coal oil, turpentine, and all volatile substances which vaporize at a low temperature, and lose bulk from the above causes, when stored for any length of time. Casks and barrels before the solutions are applied, are first heated internally by means of hot air, which for the purpose of drying the wood, is forced into them by a pump or other convenient apparatus. Afterwards the solution in a warm state is poured in through the bunghole, and when the cask is closed, it is rotated or turned about until all parts of its internal surface have been covered and coated with the solution. This being effected, hot air is again forced into the cask, whereby the solution is kept warm and liquid, whilst the pressure drives it into the pores of the wood and all the crevices and cracks which have been opened by the heat. By this means casks are rendered perfectly air and water-tight, the solutions employed being those in ordinary use, or specially known to be suitable for the purpose of resisting the action of the different liquids which casks are intended to contain.

[Printed, 6*d*. Drawing.]

A.D. 1865, August 14.—N° 2096.

WESTLEY, ROBERT ALEXANDER WILLIAM.—(*A communication from Henry Pinkus.*) — This invention relates to apparatus and receptacles for storing, transferring, and discharging fluids in and from tanks, casks, and other vessels by means of hydrostatic, hydraulic, or pneumatic force applied to the surface of a flexible or movable air-tight diaphragm, so fitted inside such tanks, casks, and vessels, that the internal space is completely divided thereby ; the diaphragm being capable of unfolding or expanding as the quantity of liquor in a vessel increases, and of folding or contracting as it runs off or is discharged. The invention may be applied to a variety of purposes where, in some cases, it is desirable to avoid the excessive agitation which renders some fluid bodies (such as petroleum when pumped) dangerous, by reason of the volatilization of explosive gases and detonating vapour, whilst in other cases, fluids, such as wine, beer, and spirits, are deteriorated by contact with the atmosphere. By this means liquids may be caused to flow from reservoirs and store vessels into other vessels, disposed above, below, or on a corresponding level therewith, without much disturbance or any contact with or exposure to atmospheric influence.

[Printed, 2*s*. 8*d*. Drawings.]

A.D. 1865, September 22.—N° 2426.

DAVIDSON, JAMES.— This is an invention of a series of machines or apparatus, severally devised for performing one or more of the processes connected with the preparation and shaping of staves, and the trussing and construction of casks.

It consists in—

1st. A machine arranged for bending staves after the previous process of steaming the wood, consists of a series of moulds or bending blocks, set transversely across the periphery of a pair of wheels mounted on a horizontal shaft. When the steamed staves are deposited in the moulds, they are, by means of screws, pressed upon by blocks, which bend the softened wood and impart to it both longitudinally and crosswise, the required form of curve.

2nd. An apparatus for cutting the bent staves to a uniform length, operates by means of two circular saws mounted in suitable head-stocks upon an iron bed. The saws are set relatively inclining so as to cut on the bevel, and they are adjustable to suit staves for casks of different sizes.

3rd. A machine arranged for (after the bending process) rounding the outside of staves and hollowing the inside, by means of rotary cutters respectively concave and convex, the staves during the operation being held in close contact with a fence by means of pressing guide rollers.

4th. A machine for jointing staves before they are bent. This cuts the edges of the staves by means of circular saws, to which the staves are presented by a pair of T-shaped arms radiating from an axis, that rotates slowly and is fitted with clips for holding the staves firmly whilst they pass between the saws, which are suitably mounted on a horizontal frame, and capable of adjustment to the angle required for the joint.

5th. Apparatus for forcing the truss hoops on to a circumposed arrangement of staves set up in the form of a cask. These are modifications of the well-known trussing press.

6th. An apparatus for grooving and chiming cask ends for the reception of the heads. The trussed cask during the process is held by ring chucks in a kind of lathe, whilst suitable cutting tools operate upon the two ends simultaneously.

7th. A reciprocating saw for cutting round the heads of casks after the pieces are jointed and dowelled together.

8th. A lathe constructed for turning the periphery of cask heads to a V-edge, and for giving the heads a slightly oval form, the heads being held fast between a face plate and an adjustable pressing plate.

9th. A machine for boring bungholes in casks.

[Printed, 5*s.* 4*d.* Drawings.]

A.D. 1865, September 29.—N° 2500.

PINCKVOSS, Johann Heinrick.—(*Provisional protection only.*)—The object of this invention relating to the construction of metal casks intended for the transport of oil, is to prevent loss by leakage and render such casks when empty capable of being stowed away in a small compass. The cask is divided crosswise, or formed in two principal parts or halves, which are connected by means of a central hoop or belt that is screw threaded internally to receive the two half parts, around which corresponding screw threads are cut externally to engage with the threads inside the belt, so that when the ends are inserted and turned they are drawn into the belt, around the center of which there is a raised rib or collar, as also around each half part, a short distance from their respective ends. The bunghole is formed in the belt to come opposite the bunghole of a cask when the metallic cask is used as a casing, and in order that the junction of the two half parts with the belt may be fluid-tight, packings of vulcanized india-rubber or other suitable material are employed. The bung is secured by a pin, which is passed through holes made in the projecting ribs or collars on the mid-ends of the two halves, and instead of cutting perfect screw threads round the ends and inside the belt, the parts may be drawn together and secured by portions of threads or inclines.

[Printed, 4*d.* No Drawings.]

A.D. 1865, October 13.—N° 2644.

MARSHALL, George.—This invention relates to a preparatory mode of treating casks intended to contain rock, hydrocarbon, and other oils, spirits, saccharine solutions and fluids, "by coating over their inside surfaces with a gluey or "pasty substance, of an animal, vegetable, or mineral kind, "suited for the character of the fluid to be placed in the "casks or vessels, and then by the pressure of an elastic gas "or vapour force the said gluey or pasty coating into the "pores and joinings of the wood composing the casks or "vessels. Glues, gelatinous substances, bituminous, tarry, "and other matters, which can be made liquid by the appli-

" cation of heat or by solvents, can be used for the said " coating."

"To prepare a wooden cask for containing petroleum and " its products, I first pour in through the bunghole common " glue (liquified in water) in sufficient quantity to coat over " the ends and part of the staves near thereto, or the whole " of the inside surface if required. The cask is then moved " about or swung on centres, and made to partake of an " irregular motion, so that the glue may be spread over the " desired surface, and when this is done the nozzle of a pipe " from air air pump is tightly fitted into the bunghole, and " air forced in for a short time, after which the cask is ready " for use."

Instead of using air under pressure, the nozzle may be put into communication with a steam boiler, and (it is stated) other substances than glue may be employed with more or less success.

[Printed, 8*d*. Drawing.]

A.D. 1865, November 29.—N° 3061.

MARSHALL, George.—(*Provisional protection only.*)—This is an invention of apparatus designed for facilitating the process of coating internally casks intended to contain hydrocarbon and other fluids. It consists of a moveable platform, capable of being raised by a lever between two upright standards or side frames. Laterally projecting from the inside of one standard is a tapering tube or nozzle, and directly opposite, projecting from the other standard in the direction of the nozzle, is an adjustable center which, by means of a screw or other suitable contrivance, is caused to move either to or from the nozzle as may be required. When the liquid glue or other of the substances used for coating casks has been poured therein, the cask is placed on the platform, which is then elevated until the bunghole is brought coincident with the nozzle; the adjustable center is then projected against the opposite side of the cask which, when the platform is lowered, remains suspended between the nozzle on one side and the center on the other. In this position the cask may be caused to rotate, whereby the coating solution is made to flow over its internal surface, whilst through the tubular nozzle, which is in communication with a reservoir containing elastic fluid under pressure, the latter is admitted to the cask. The pressure of the fluid forces the gelatinous coating solution into the pores of the wood, and also into the joints, so effectually as to prevent saturation and leakage.

[Printed, 4*d*. No Drawings.]

A.D. 1865, December 23.—N° 3325.

NEWTON, William Edward.—(*A communication from Henry Wurtz.*)—This invention relates to a method of so treating or acting chemically on common glue or gelatine, that, without losing its usual quality, it will become in the process of drying converted into a substance insoluble in water, and it may by the addition of various ingredients be reduced to a solid substance resembling bone or ivory, that will be without adhesiveness when moistened and will (it is stated) neither putrefy, liquefy, or give off bad odours when exposed to a damp atmosphere, but will remain transparent, hard, strong, tough, and elastic. In its solid state the compound may be used as a substitute for bone or ivory for many purposes, and amongst the uses to which in a liquid state it may be applied, is cementing the joints, filling the pores of the wood and lining barrels adapted for holding petroleum and other oils, turpentine, and alcohol, also lard barrels, and butter firkins. It is said to be very superior to common glue for such purposes, being insoluble and free from odour. The effect is produced on the glue in a state of solution, heated and mixed with a strong solution of chromic acid, or of an alkaline bichromate; when cold and dried the glue will be found to have undergone the desired change, and before the bichromate is added, other substances (according to the purpose for which the compound is to be used) are to be mixed with the solution of glue. Sand, clay, and similar substances impart hardness to the solid material, chopped animal, vegetable, and other fibrous matters increase its toughness and strength, and glycerine which combines intimately with the mass, prevents brittleness; when required it may whilst in a heated state be ground, and it may be moulded into various forms.

[Printed, 6*d*. No Drawings.]

1866.

A.D. 1866, March 9.—N° 718.

MACHATTIE, Alexander Taylor.—This invention relates to a method of coating or lining for the purposes of protection and preservation, metallic or wooden casks and other vessels, with "Portland cement, Roman cement, or hydraulic lime, "and silicate of soda or potash, otherwise termed soluble "glass," in such manner that they may be used for conveying various kinds of liquid or solid substances, without imparting thereto anything injurious arising from the contact of the material of the casks with the substances they contain. In practically carrying out the invention, the inventor, says, "I "take the cement or hydraulic lime in a finely ground state "and having well mixed it with water to a convenient consistency, such as that of paint, I apply it with a brush like "paint to the metallic or wooden surface to be coated or lined, "such surface being previously carefully cleaned. After "this first coating of cement or lime has become thoroughly "dried I similarly apply or brush on over it a solution of "silicate of soda or of potash; this second coating is also "thoroughly dried, and the article is afterwards steeped in "water to remove all soluble matters. If the two coatings "thus described are carefully applied, and upon clean surfaces, "no further treatment will be found requisite; but if it is "found that the surface has not been completely covered, or "if the coating has not adhered on some parts, the two "coatings and subsequent washing may be repeated."

[Printed, *4d.* No Drawings.]

A.D. 1866, April 28.—N° 1203.

HUTTON, Thomas.—This is an invention of apparatus designed for closing the tap holes of casks and barrels, thereby dispensing partly or entirely with the use of corks, for the purpose of excluding the atmosphere when casks are empty. The apparatus consists of a valve or valves which may be variously constructed to open when the tap is driven into the cask, and close immediately it is withdrawn. The contrivance first described consists in fixing inside the cask a piece of sheet india-rubber over the tap-hole, so as completely to cover and close it. The piece of india-rubber is so slit through across the center, that it will yield and allow the end of the tap when inserted to pass through between the lips of the slit, which again close at the moment the tap is drawn out, so as to prevent the entrance of fresh air. When flat valves are used for the same purpose, they are closed by the reaction of springs, which yield when forced back by the end of the tap when the latter is inserted.

"The tap hole may be closed outside the barrel by means " of a cork or plug attached to the barrel by a cord or chain, " or by a plate or door sliding in a frame attached to the " barrel. The internal fittings described may, by widening " the tap hole, be introduced from the outside, and the out- " side door or plug or cork and fastening and internal fittings " may thus be formed by one piece of mechanism."

[Printed, 1*s*. Drawings.]

A.D. 1866, May 12.—N° 1368.

DENNIS, WILLIAM.—(*Provisional protection only.*)—The object of this invention, relating to apparatus applicable to casks, is to facilitate tapping, and the subsequent closing of the tap hole to prevent the admission of air when a cask is empty. The inventor says, "in order that the operation " of tapping casks may be effected with more facility than " heretofore, I let into the head or other part of the cask a " socket, in which is a valve seat; beyond the valve seat, " towards the inside of the cask, there is a chamber formed " in the socket, with a screw thread cut on its sides, and a " plug with a similar thread cut on its exterior is screwed into " the thread within the chamber; the outer end of the screw " plug forms a valve in such manner that when the plug is " screwed up it makes a tight joint against the valve seat " already mentioned, and the liquid in the cask is prevented " escaping. The plug is furnished with a packing ring of " india-rubber or other suitable material, and this packing " may be applied either to the end or side of the plug. On " the outside of the socket beyond the valve, another screw " thread is cut to receive a corresponding screw on the tap. " The tap employed for tapping a cask furnished with appa- " ratus such as above-described has a square projecting from " its end, and this square enters a corresponding recess in the

" end of the screw plug; then the act of turning the tap " round to screw it into the socket on the cask unscrews " the screw plug, and removes it out of contact with the " valve seat; the liquid is then able to pass freely to the tap. " and when this is opened can escape freely from the cask. " The locking parts between the tap and the screw plug may " be formed in any convenient way; suitable passages are " formed in the socket to let the liquid pass freely the portion " of the screw plug on which the thread is formed. It will " be seen that in removing the tap from the cask the screw " plug will again be made to close on the valve seat, so " that the air will be prevented entering the cask, which " frequently is very desirable."

[Printed, 4*d*. No Drawings.]

A.D. 1866, May 14.—N° 1374.

NEWTON, William Edward. — (*A communication from William Stuben de Zeng.*)—The object of this invention, relating to the manufacture of metallic barrels and vessels, is to combine in their construction lightness with strength. To this end " corrugated sheet iron is employed for the cylindrical " portion of such vessels, and this iron is to be rivetted together " where the edges of the sheets lap; the heads are also to be " corrugated so as to stiffen them; this is to be done between " dies in a suitable press, and a flange is also to be turned up " all around the head, and the head introduced within the " cylinder, and rests upon the first of its corrugations. The " parts are to be so formed that the edges of the corrugated " sheet metal cylinder project about a quarter of an inch " beyond the edges of the flange of the head, and the edges " of the cylinder are turned over to retain the head, after " which a hoop of iron sufficiently strong is driven over the " end of the cylinder to strengthen the chine. Both heads " are thus secured, and one or more bung or tap holes are " provided, for which purpose a metal ring or disc is employed " with a hole and female screw to receive a metal screw plug, " and these metal rings or discs are to be rivetted to the sheet " metal. When the barrel or other vessel has been thus " completed, it is to be "galvanized" by immersion in a " bath of melted zinc or its alloys after the surface of the "metal has been cleaned in any of the usual manners, the "effect of which galvanizing is to fill all the pores and "joints, and unite the parts with great firmness; this galvanizing may be done both inside and outside, or only on "the inside or the outside. This improvement may be "applied to the manufacture of milk cans and other vessels, "as well as to barrels."

[Printed, 6*d*. Drawing.]

A.D. 1866, May 23.—N° 1449.

HASELTINE, GEORGE. — (*A communication from John Louis Alberger.*)—This invention relating to the manufacture of metallic hoops for casks and barrels, consists in passing the metal bands before they are made into hoops, between two rollers respectively furnished, one with an annular groove or grooves, and the other with a corresponding projection or projections which enter into the groove or grooves of the first named roller when they revolve face to face in contact. By passing a metal hoop band between a pair of such rollers furnished with a single groove, a longitudinal bead is raised on one side, and a corresponding depression is formed on the other side of the band, which side when the bands are formed into hoops, is turned inside to come against the surface of the cask, the raised bead forming externally a raised rib round the center of the hoop.

Hoops (it is stated) made upon this principle are much stiffer and stronger than hoops which are plain, and they afford a greater protection to the staves or body of the cask, which they grip more tightly and are less liable to slip.

They may when made of iron be galvanized to prevent corrosion. They are jointed by overlapping and rivetting in the usual way.

[Printed, 6*d*. Drawing.]

A.D. 1866, August 1.—N° 1975.

POOL, JOHN.—(*Provisional protection only.*)—This invention relating to the manufacture of metallic hoops for casks and vessels consists in (as described by the inventor.)

1st. "Making the said hoop without joint or weld, and in "the required coned, or tapering, or splayed form."

2nd. "Forming hoop iron with one side flat and the other "concave, or convex, or with one edge thicker than the other, "and rolling hoop iron having any of the transverse sections "above described, or with the ordinary section in curve, so "that when jointed and riveted up it will form a coned-shaped "or splayed hoop."

3rd. "A machine having fixed and adjustable rollers, having "their axles inclined one to the other for giving the necessary "splay to a plain cylindrical hoop, and also easing and "expanding the weldless hoops above-mentioned for or by "the cooper."

[Printed, 4*d*. No Drawings.]

A.D. 1866, October 15.—N° 2666.

LAKE, WILLIAM ROBERT.—(*A communication from Thomas Marsh.*)—This invention relating to an apparatus designed for facilitating the tapping of casks and closing the outlet when the tap or faucet is removed, consists of a short tubular socket screw threaded internally, and furnished with a flange at one end. The plain end of this socket is passed through the tap hole from the outside, until the back of the flange comes against the front of the cask, to which it is then to be firmly secured by screws. The socket is furnished with a plug which is screwed into its plain end up to a shoulder, interposed between which and the end of the socket is an india-rubber packing. The bore of the outer end of the socket is enlarged to permit of the end of the tap or faucet being screwed on to the front end of the plug, which, when the shoulders meet is caused to turn by continuing the axial motion of the tap, and is screwed back so as to relieve the packing and open an outflow passage, through which the liquor issues when the spigot of the tap is turned. When the cask is empty, by unscrewing the tap, the plug is first brought to its normal position against the packing and becomes fixed, and then by continuing to turn the tap on its axis, the latter will unscrew off the front end of the plug.

[Printed, 6*d*. Drawing.]

A.D. 1866, November 22.—N° 3073.

LAKE, WILLIAM ROBERT.—(*A communication from Thomas Marsh, Stephen Perry, and John Balckom.*)—The object of this invention of apparatus for tapping casks, is to prevent the loss of a portion of the contents, which sometimes happens when casks are tapped in the ordinary way. In an annular recess externally formed round the tap hole of a cask, is fitted a metal collar which is secured by screws. The tap or faucet is made in two parts, one being the tap proper, which is screwed through the other part, consisting of an outer shell or barrel, that is also screw-threaded externally at its extreme end, for the purpose of engaging with screw-threads formed inside the collar, when the tapping of the cask is required. When the barrel is screwed tight into the collar, by turning the tap on its axis, its end is projected beyond the barrel against the outer end of the cork or plug, and the motion is continued until by degrees the cork or plug is forced back through the hole to the inside of the cask.

By forming a cutting bit on the end of the tap or faucet, it may (according to a modification) be made to bore its own hole, and a strainer may be introduced in a chamber at the base of the faucet.

[Printed, 8*d*. Drawing.]

A.D. 1866, December 22.—N° 3374.

SHANKS, Andrew.—This invention relates to a method of joining or connecting together the ends of hoops for casks and barrels and other purposes, with a view to dispense with the system of rivetting. The holes in one end of a hoop are punched through in the form of a horse shoe, and for the other end (the same form of punch is used) but only three sides of the holes are cut through, so that instead of the pieces of metal being cut clean out, they remain on one side attached to the hoop band, and form when bent outward a series of tongues which, when the band is bent into the form of a hoop, enter the holes in the other end of the band; and when the latter in the form of a hoop is placed upon a cask and driven on, the tongues are drawn through the holes, thereby (as stated) "making a strong and substantially "joined hoop, all completed from the hoop iron itself."

[Printed, 1*s*. 2*d*. Drawings.]

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—— (*Literary, Scientific, and Mechanics' Institute*).
—— (*Lyceum Library*).
—— (*Royal Institution, Albion Street*).
—— (*Young People's Institute*).
Huntingdon (*Literary and Scientific Institution*).
Ipswich (*Working Men's College*).
Kendal (*Christian and Literary Institute*).
—— (*Highgate Mechanics' Institute*).
—— (*Working Men's Institute*).
Kidderminster (*Mechanics' Institute*).
Lancaster (*Mechanics' Institute and School of Science*).
Lee, Kent (*Working Men's Institution*).
Leeds (*Chapeltown Branch Library*).
—— (*Church Institute*).
—— (*Holbeck Branch Library*).
—— (*Hunslet Branch Library*).
—— (*Leeds Library*).
—— (*Mechanics' Institution and Literary Society*).
—— (*Philosophical and Literary Society*).
—— (*Working Men's Institute*).
—— (*Young Men's Christian Association*).
Leek, Staffordshire (*Literary and Mechanics' Institution*).
Leicester (*Law Society*).
—— (*Young Men's Christian Association*).
Leighton Buzzard (*Working Men's Mutual Improvement Society*).
Leith (*Mechanics' Subscription Library*).
Lewes (*Fitzroy Memorial Library*).
—— (*Mechanics' Institute*).
—— (School of Science and Art).
Lincoln (Mechanics' Institute).

Liverpool (*Institute*).
——— (*Medical Institution*)
——— (*Polytechnic Society*).
Llanelly (*Chamber of Commerce and Reading Room*).
Lockwood (*Mechanics' Institution*).
London (*Albert Working Men's Club, Knightsbridge*).
——— (*Bank of England Library and Literary Association*).
——— (*Beaumont Institute, Mile End*).
——— (*Bedford Working Men's Institute, Spitalfields*).
——— (*Birkbeck Institution, Southampton Buildings, Chancery Lane*).
——— (*Bow and Bromley Road Institute, Bow Road*).
——— (*Bow Common Working Men's Club, Devon's Road, Bow Common*).
———(*Christchurch Working Men's Club, New Street Lark Hall Lane, Clapham*).
——— (*Clerkenwell Club, Lower Rosoman Street*).
——— (*Holloway Working Men's Club and Institute, Holloway Road*).
——— (*Literary and Scientific Institution, Walworth*).
———(*London Association of Foremen Engineers and Draughtsmen*).
——— (*London Library, St. James'*).
——— (*St. James and Soho Working Men's Club, Rupert Street, Soho*).
——— (*St. Mary Charterhouse Working Men's Club, Golden Lane*).
——— (*South London Working Men's College, Blackfriars Road*).
——— (*Southwark Working Men's Club, Broadwall, Stamford Street*).
——— (*Working Men's Club, Brixton Hill*).
——— (*Working Men's Club, St. Mark's, Victoria Docks*).
——— (*Working Men's Club and Institute, Battersea*).
——— (*Working Men's Club and Institute Union, Strand*).
——— (*Working Men's Club, Triangle, Hackney*).
———(*Working Men's College, Great Ormond Street*).
Longwood (*Mechanics' Institution*).
Lowestoft (*Library and Reading Room*).
Lye (*Institution*).
Lymington (*Literary Institute*).
Madeley, Shropshire (*Anstice Memorial, Workmen's Club and Institute*).
Maidstone (*St. Paul's Literary Institute*).
——— *Working Men's Club and Institute.*)
Maldon, Essex (*Literary and Mechanics' Institute*).
Manchester (*Ancoats Branch Free Library*).
——— (*Athenæum*).
——— (*Campfield Free Lending Library*).
Manchester (*Cheetham Branch Library*).
——— (*Chorlton and Ardwick Branch Free Library*).
——— (*Hulme Branch Free Library*).
——— (*Law Library*).
——— (*Mechanics' Institution*).
———(*Natural History Museum, Peter Street*).
——— (*Owen's College*).
——— (*Portico Library, Mosley Street*).
——— (*Rochdale Road Branch Free Library*).
——— (*Royal Exchange Library*).
——— (*Scientific and Mechanical Society*)
Mansfield (*Co-operative Industrial Society*).
——— (*Mechanics', Artizans', and Apprentices' Library*).
——— (*Mechanics' Institute*).
Marlborough (*Reading and Mutual Improvement Society*).
——— (*Working Men's Hall*).
Melksham (*Mutual Improvement Society*).
Melton Mowbray (*Literary Institute*).
Mere, near Bath (*Literary Association*).
Middlesborough (*Iron and Steel Institute*).
——— (*Mechanics' Institution*).
Middlewich (*Literary and Scientific Institution*).
Modbury (*Mechanics' Institution*).
Mossley (*Mechanics' Institute*).
Newark (*Mechanics' Institute*).
Newbury (*Literary and Scientific Institution*).
Newcastle-upon-Tyne (*Mechanics' Institution*).
——— (*Working Men's Club*).
New Mills, near Stockport (*Mechanics' Institute*).
Newport, Isle of Wight (*Young Men's Society and Reading Room*).
Northampton (*Mechanics' Institute*).
North Shields (*Free Library*).
Nottingham (*Mechanics' Institution*).
——— (*Subscription Library, Bromley House*).
Odiham (*Mechanics' Institution*).
Oldham (*Analytic Literary Institution*).
——— (*Mechanics' Institution, Werneth*).
Ormskirk (*Public Library*).
Oswestry (*Institute*).
Over, Cheshire (*Working Men's Institute*).
Oxford (*North Oxford Working Men's Club*).
Patricroft (Mechanics' Institution).
Pembroke Dock (Mechanics' Institute).
Pendleton (Mechanics' Institution).

Penzance (*Institute.*).
——— (*Penzance Library*).
——— (*Working Men's Association*).
Perth (*Mechanics' Library, High Street*).
Peterborough (*Mechanics' Institution*).
Plymouth (*Working Men's Institute*).
Pontypool (*Literary Institute*).
Poole (*Literary and Scientific Institution*).
——— (*Mechanics' Institute*).
Port Glasgow (*Public Library*).
Portsea Island (*Young Men's Christian Association*).
Preston (*Institution for the Diffusion of Knowledge*).
Redruth (*Redruth Institution*).
Reigate (*Mechanics' Institution*).
Richmond (*Working Men's College*).
Rotherham (*Rotherham and Masbro' Literary and Mechanics' Institute*).
Royston (*Institute*).
Rusholme (*Public Hall and Library*).
Ryde, Isle of Wight (*Philosophical and Scientific Society*).
——— (*Young Men's Christian Association and Literary Institute*).
Saffron Walden (*Literary and Scientific Institution*).
St. Just (*Institution*).
St. Leonard's (*Mechanics' Institution*).
——— (*Working Men's Club*).
Salford (*Working Men's Club*).
Salisbury (*Literary and Scientific Institution*).
Saltaire (*Literary Institute*).
Scarborough (*Mechanics' and Literary Institute, Vernon Place*).
Selby (*Mechanics' Institute*).
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Shaftesbury (*Literary Institution*).
Sheerness (*Literary Institute*).
Sheffield (*Branch Free Library*).
——— (*Brightside Branch Library*).
——— (*Literary and Philosophical Society, School of Arts*).
——— (*Mechanics' Institution*).
Shepton Mallet (*Reading and Mutual Improvement Society*).
Sidmouth (*Mechanics' Hall*).
Skipton, Yorkshire (*Mechanics' Institute*).
Slough (*Mechanics' Institute*).
Smethwick, Staffordshire (*Library, Reading Room, and Literary Institute*).
Southampton (*Polytechnic Institution*).
——— (*Workmen's Hall*).
Southport (*Athenæum*).
South Shields (*Public Free Library*).
Southwell (*Literary Institution*).
Spalding (*Mechanics' Institute*).
——— (*Christian Young Men's Association*).
Stafford (*Mechanics' Institution*).
Staines (*Literary and Scientific Institution*).
Staines (*Mechanics' Institute and Reading Room*).
Stalybridge, Cheshire (*Mechanics' Institution*).
Stamford (*Institution*).
Stourbridge (*Associated Institute*).
Stourbridge (*Church of England Association*).
Stourbridge (*Iron Works Reading Room and Library*).
——— (*Mechanics' Institution*).
——— (*Working Men's Institute*).
Stowmarket (*Literary Institution*).
Stratford (*Working Men's Hall*).
Sudbury, Suffolk (*Literary and Mechanics' Institute*).
Sunderland (*Working Men's Club*).
Swansea (*Royal Institution of South Wales*).
——— *South Wales Institute of Engineers.*
——— (*Working Man's Institute*).
Tavistock (*Mechanics' Institute*).
——— (*Public Library*).
Thornton, near Bradford (*Mechanics' Institute*).
Thornton Heath, Croydon (*Workmen's Club*).
Todmorden (*Mechanics' Institution*).
Truro (*Cornwall County Library*).
——— (*Institution*).
——— (*Royal Institution of Cornwall*).
Tunbridge (*Literary and Scientific Institute*).
——— (*Mechanics' Institute.*)
Tunbridge Wells (*Mechanics' Institution*).
——— (*Society of Literature and Science*).
Turton, near Bolton (*Chapel Town Institute*).
Tynemouth (*Free Public Library*).
Ulverston (*Temperance Hall*).
Uttoxeter (*Mechanics' Literary Institute*).
Uxbridge (*Uxbridge and Hillingdon Reading and Newsroom Institute*).
Wakefield (*Mechanics' Institute*).
Wallingford (*Free Library and Literary Institute*).
Walsall (*Free Library*).
Walsham-le-Willows, Suffolk (*Institute*).
Ware (*Institute*).
Warminster (*Athenæum*).
Watford (*Literary Institute*).
Wellingborough (*Working Men's Club*).
Wellington (*Young Men's Christian Association*).
Wells, Somerset (*Mechanics' Institution, Grove Lane*).
——— (*Young Men's Society*).
West Bromwich (*Free Library*).
Whaleybridge (*Mechanics' Institute*).
Whitby (*Institute*).
——— (*Museum*).
——— (*Subscription Library*).
Whitehaven (*Mechanics' Institute*).

Whitehaven (*Working Men's Reading Room*).
Whitstable (*Institute*).
Wilton (*Literary Institute*).
Winchester (*Mechanics' Institution*).
——— (*Training College*).
Winsford (*Town Hall Reading Room*).
Wirksworth (*Mechanics' Institution*).
Wisbeach (*Mechanics' Institute*).
Witham (*Literary Institution*).
Witney (*Athenæum*).
Wolverhampton (*Law Library*).
——— (*Library*).
Wolverton (*Institute*).
Woodbridge (*Literary and Mechanics' Institute*).
——— (*Working Men's Hall*).
Worcester (*Railway Literary Institute*).
——— (*Workman's Hall*).
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——— Wabash College, Crawfordsville, Indiana.
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